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Immediate Wartime Outlook and Indicated Post-War Conditions with Respect to the Control of the Venereal Diseases*

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I WISH to refer to what has been accomplished in venereal disease control in the Army since mobilization, mention briefly the tasks that lie immediately ahead, and then discuss some of the things we have learned that might with profit be carried over into the post-war management of this problem.

In general, the venereal disease situation in the Army has steadily improved since the first months of mobilization. The venereal disease rate for 1940 was 42.5 per 1,000. While current rates are not entirely comparable because of certain changes in administrative procedure, the rates for the past few months for infections acquired after entry into the service have been in the neighborhood of 25 per 1,000 per year. The syphilis rate has been under 5. When these rates are further computed according to race, age, and sex they appear to be no higher than the attack rates for comparable groups of civilians during the past decade. In other words, there is no evidence that a young man in the Army today stationed in the Continental United States is subjected to a higher risk of venereal infection than he would be as a civilian.

Even more striking, and perhaps more significant, are the data on days lost from duty because of venereal disease. In 1940 each 1,000 men lost a total of 1,278 days; current rates are at a level of 368 days lost per year. For each million men under arms this represents a saving over the rate prevailing in 1940 in hospital costs alone of approximately $4,000,000 each year —quite a saving considering the size of our present Army. Continuing advances in preventive measures, and in new methods of treatment, give promise

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of further reducing the non-effective days.

Since October 1, 1942, through June, 1943, over 55,000 men infected with venereal disease as civilians have been taken into the Army, hospitalized until non-infectious, given adequate treatment under decent conditions, and turned over as functioning members of the Army. Over 20,000 of these have been individuals with syphilis.

Abroad, in some areas where there are large bodies of troops, the venereal disease rate has been very low; in other theaters of operation it has been high. The latter areas are receiving concentrated attention and we can only hope that our efforts will bear fruit.

The accomplishments thus far may be attributed we believe, to the recognition of venereal disease as primarily a medical problem, to the unfailing support of the control program by those in places of highest authority, and to the effective coöperation received from civilian authorities and community groups. I do not wish to give the impression that we are satisfied with the present situation. Indeed, the goal has been set at a level of rates much below those obtaining at present.

What tasks lie immediately before us?

First, we must afford protection to our troops abroad. I shall not dwell on this except to say that the problem is receiving close attention.

Second, much greater effort must be made by all concerned, both military and civilian, to bring the rate for Negro troops more in line with the rates for the Army as a whole. Recent experience indicates that this is not an impossible task.

Third, research—in the laboratory, in the hospital, in the field—must be pressed forward with all possible speed. Competent work is in progress under sponsorship of the Committee on Medical Research of the Office of Scientific Research and Development, on prophylaxis and on new therapeutic agents. We need better epidemiological data and improved diagnostic tools.

Fourth, we must expand our educational efforts, particularly as directed to the young women of the community. Progress has been made in teaching the soldier to understand and avoid the hazards of venereal disease. The material assistance in this aspect of the program of the U. S. Public Health Service, the American Social Hygiene Association, many state health departments, and other groups is gratefully acknowledged. The responsible citizens of the community, too, are much better informed than they used to be. But this educational process is not reaching down to the young girls who are the companions of our soldiers. They give the impression of being sophisticated and knowledgeable in these matters, but actually they are sadly lacking in useful information.

We are often criticised on the grounds that instruction in sex hygiene and venereal diseases tends to lead to sexual promiscuity. I know of not the slightest evidence to support that view. Moreover, it is less than just to assume that fear of venereal disease is the principal reason that men and women adhere to the accepted moral code. We need not be afraid of the effects of knowledge concerning sex hygiene and venereal disease; for knowledge will carry with it an understanding and an orientation from which only good can flow. This is a job for all of us, the armed forces, health departments, and voluntary groups.

Fifth, the gains made against organized prostitution must be maintained. Prostitution is a hardy weed and constant attention is required to keep the gardens reasonably clean. It can be done only with and through the full support of the citizens of the community. Law enforcement and investigating machinery must be adequate of

course, but we have seen few communities that could not inaugurate and maintain a satisfactory program when the substantial citizens willed it so. It is not within my province to debate the moral issues involved, but it is my business to protect soldiers from venereal disease, and it has been amply demonstrated during this war period, if further evidence is necessary, that prostitution is a potent breeder of these diseases.

We have repeatedly to answer questions based on skepticism concerning the value of the repression program. Many worthy citizens believe that men must have prostitutes, that prostitutes can be made safe and sanitary by medical control, and that segregation and regulation rather than repression is the way to handle this problem. These beliefs are based on misinformation. It is not anticipated that prostitution will be wiped out any more than we expect that malaria will be eradicated in any foreseeable time, but it is certain that prostitution can be reduced in extent. To date the results have been far from discouraging and no one in authority would wish to return to the conditions that existed in many communities in the early days of mobilization.

There are numerous instances which lead one to believe that a more sensible approach is being made to the prostitution problem. While the prostitute herself is certainly not without blame, it is the third party in the boy-girl-facilitator combination that makes prostitution dangerous to the health of soldiers. It is a question of mathematics. A girl, regardless of how depraved her morals or how strong her desire for money, can expose relatively few soldiers without the aid, whether wittingly or not, of so-called facilitators, such as madams, taxi drivers, bellhops, proprietors and owners of cheap hotels and rooming houses. With the assistance of these facilitators, who are often financially interested, she may have the opportunity of exposing many more individuals, thus greatly increasing the number of men subjected to the risk of infection. It is obvious that repressive measures should be directed to the apprehension of the facilitator, and not to the medically unprofitable activity of jailing prostitutes.

Finally, we are faced with the problem of the sexually delinquent young girl. This is not a prostitution problem and should not be confused with it. It is not even primarily a law enforcement problem, but a social and a medical one. I do not know the solution for it and I am not sure that anyone else does. But it is imperative that facts be accumulated quickly, in the hope that these might point the way to a more rational approach to the problem.

It is very disturbing to see misguided young girls, often bedraggled and undernourished, without family or friends, caught up in the prostitution repression program—jails and courts—when the whole situation might be handled by a stern father and a good doctor. Here is an opportunity for wise community leadership. The development of detention houses with facilities for medical treatment and possible rehabilitation is wholly sound. But something in addition is required. These girls need a flag around which to rally. They need to have some job to do and a feeling of personal responsibility toward the war effort. Possibly the expansion of community organizations of one sort or another to include these young girls in a democratic fashion may afford a partial answer. In any case, the energies of law enforcement personnel should not be diverted from the important and difficult job of the repression of true prostitution; that would please only those interests that profit from prostitution.

From this wartime experience in venereal disease control what lessons

are to be learned that may be useful when the time comes to reëstablish our peacetime society? What new approaches to this old problem may be indicated in order to extend the civilian program so gallantly launched a few years ago?

First, I believe we should more fully exploit our medical resources in the attack on these diseases. No one will deny that moral factors play an influential rôle in the occurrence of syphilis and gonorrhea. But it is equally obvious that applications of the principles of epidemiology will lessen the toll of venereal disease quite out of proportion to the results obtained by the moral approach alone.

Army experience is emphasizing the value of prompt diagnosis and prompt treatment to render the individual noninfectious. The value of contact investigation in discovering sources of infection and, more important perhaps, *places* where infection is acquired; the value of prophylaxis as a preventive measure; the importance of obtaining accurate data on the distribution of disease to the end that control measures may be more sharply focused.

The best results can be obtained only by greater utilization of specially qualified medical personnel. A most important step was taken by the War Department when it authorized the assignment of qualified venereal disease control officers to large camps, to the major headquarters of the Army, and to all theaters of operation. Merged into the regular medical service of the Army, the influence of this handful of specialists is far-reaching. They study the problem, determine where and under what circumstances soldiers are being infected; why rates are high in one organization and low in another; what new forms of treatment or improved administrative methods may reduce the days lost from duty. They serve as advisers in these matters to their superior officers, and assist in coördinating the efforts of military and civilian groups. They thus act in the military organization as a catalyst, making it possible more fully to utilize the available resources in combating these diseases.

I enlarge upon this feature of the Army's efforts because it seems to me no less important that a civilian program be built around medical specialists in this field. This has already been done in some states, but in too many states and cities in this country an effort has been made to do a big job with personnel inadequate both as regards quality and quantity. It is true that the Army has taken many well qualified men in this field from civilian life, but I can assure you that eventually the Army will repay this debt many times over.

A second noteworthy lesson to be drawn from Army experience is an understanding of the fundamental importance of the acceptance by the individual of some measure of personal responsibility in the control of these diseases. Related to this are questions concerning education and leadership.

Reference has already been made to the importance of education. The influence of that intangible quality called leadership is less well understood. In the Army it is a well established principle that the commanding officer is responsible for the health and welfare of his troops. Just as in civilian life, some diseases such as tetanus and smallpox can be prevented by purely medical measures. Whenever the individual must assume a measure of responsibility in his own protection, however, the rôle of the commanding officer cannot be overestimated, for in the Army this is related to discipline and morale, both of which stem from leadership. The same elements are present in civilian life. Civic leaders can do much to strengthen in the ordinary citizen the

desire to do the right thing, a pride in one's place in life, and a deep conviction concerning the dignity of the individual. I feel that our community leaders should play a more prominent part both as individuals and through groups in furthering measures that lead to good health. This must be done by leading, not by driving. I hope the day will come when the venereal diseases are universally regarded as diseases, not crimes. Punitive measures invariably promote concealment and operate directly against the best interest of the affected individual and the public health.

We are witnessing in many communities the successful control of disease through close integration of health, law enforcement, welfare, and other civic agencies. This is dynamic social action, which can be just as effective in peace as in war. Venereal disease control is essentially a local affair. Programs and funds may originate centrally, but in the final analysis we get only that amount of control which the local community is willing to support. Blood test surveys on selectees have turned the light of day on venereal disease conditions in every community in the land. It is to be hoped that these data will be a stimulus to action at the earliest possible moment.

And, finally, I believe that this total mobilization for war has given us a new concept of the relation of health to welfare and efficiency. Time and again we see how the illness of one man may seriously cripple the team—a bomber crew, a tank crew, or a specially trained combat unit. The Army cannot afford the waste occasioned by venereal disease; our civilian economy now and after the war can no better afford it. We are developing, through this necessity for total effort, a new understanding of the individual's responsibility to stay well, of the community's responsibility to help him stay well, and of the physician as an integral and responsible part of community life and effort.

Fatal Staphylococcus Intoxication from Goat Milk

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DURING the past decade there have been numerous reports of outbreaks of food poisoning due to Staphylococci. While such outbreaks are relatively common and frequently involve large numbers of people, fatalities are rare. In the timely summary entitled "Food Poisoning," by Dack [2] the statement is made that "Staphylococcus food poisoning in otherwise normal individuals is not fatal." While the incidence of fatalities is very small indeed, we believe there are records of apparently valid cases of fatal intoxication due to the ingestion of Staphylococci and their toxic products.

Dorling [4] cites the case of an elderly individual dying 24 hours after eating the remainder of a can of soup opened 1 week previously. The patient had a whitlow on the left thumb at the time the can was opened. The soup had been kept at room temperature after opening the can. The onset of illness began with violent vomiting and diarrhea 3 hours after eating the soup. Post-mortem examination showed an inflammation of the gastric and intestinal mucosa. The gastrointestinal tract was filled with a thin ochre-colored fluid containing many Staphylococci similar to the organisms found inside the tin can. No Salmonella or similar pathogens could be isolated. The evidence in this case strongly suggests but does not prove that Staphylococci were etiologically related to the illness.

Blackman [1] describes the case of a 12 year old colored girl who developed "vomiting, fever, headache, diarrhea, vertical nystagmus, fine tremor of the iris (hippus), spasticity and general collapse" 5 hours after eating a large Thanksgiving dinner. Death occurred 36 hours after the onset of illness. Post-mortem examination revealed "acute diffuse enteritis of ileum and jejunum, 'diphtheric membranes,' molds of ileum and jejunum, septicemia (*Staphylococcus albus*), thrombi in small vessels of intestine, liver, lung, kidney, vagina and lymph nodes, focal necroses in liver, spleen and bone marrow. Small hemorrhages in the stomach, colon, vagina, brain and meninges." There is some question in this case as to the fundamental nature of the etiology of the illness. The septicemia with numerous small thrombi and areas of focal necrosis diffusely distributed in the various organs suggest the condition was not due alone to the ingestion of many organisms and pre-formed toxins but more probably followed some unrecognized intra-abdominal staphylococcic infection.

Denys [3] reported in 1894 one fatality in an outbreak involving several families, only two of which were interviewed for epidemiologic data. In this instance illness followed the eating of meat from

a cow which had suffered from puerperal sepsis. Symptoms included malaise, nausea, vomiting, diarrhea, abdominal pain, and prostration, with death following on the 3rd day. Bacteriological studies revealed many Staphylococci of both aureus and albus varieties, the latter predominating. Post-mortem examination in the one fatal case 3 days after death revealed much decomposition, moderate congestion of the peritoneum and intestine, with marked congestion of the trachea, larynx, and bronchi. The respiratory mucosa was red and infiltrated with "sanguinous suffusions."

Finnel [5] cited in 1856 the case of a woman "who had died from poisoning by eating soup made from mutton, which had been cooked in the house for five or six days. The entire family, consisting of five persons, were poisoned; but all except the mother recovered. After eating the soup, the patient vomited and purged violently and died in a collapsed condition. The tongue throughout the attack was white." The details of the autopsy findings were not given. While the clinical findings were compatible with what is now recognized as Staphylococcus intoxication, there are not enough data to substantiate this interpretation.

Taylor [11] one hundred years ago recorded a case clinically typical of Staphylococcus intoxication with severe abdominal griping, vomiting, purging, and prostration, with the onset 3 hours after the meal. Since this was 40 years before Rosenbach demonstrated the relationship of Staphylococci to purulent lesions there are not sufficient data to prove they were the cause of the illness.

Epidemiologic data *—In the familial outbreak to be reported it would appear that two fatalities were due to the drinking of raw, unrefrigerated milk drawn from a goat suffering from a unilateral mastitis.

On March 16, 1942, at 6:00 P.M. the goat was milked and nothing unusual was noted except that 6½ pints were obtained in place of the usual 8 pints. At 9:00 P.M. Ernest H., father of Ruth and Robert mentioned later, drank ½ pint of the milk. At 10:30 P.M. he became acutely ill with continuous vomiting and purging. At 11:00 P.M. he called the local physician and, after treatment by him, the vomiting and purging ceased. However, he continued to feel exhausted and complained of blurring of vision and of difficulty in focusing for the next few days.

On the morning of March 17, 1942, approximately 12 hours later, Mrs. E. H. used part of the milk (unrefrigerated) to make biscuits and gravy. This was served to 7 adults and 4 children (16, 8, 4, and 3 years of age). In addition Ruth and Robert (3 and 4 years old, respectively) each drank ¼ pint of the milk. Cream from the milk was served in the coffee which the adults drank. One and one-half hours later Ruth and Robert, suddenly while playing on the floor, and without warning, started vomiting. Robert had marked purging. There were no other complaints. At 11:00 A.M. the local physician was consulted and a prescription was obtained. The nature of this is unknown. Their condition continued to become worse and another physician was called to the home. At 6:00 P.M., which was the regular milking time, the goat was found dead. At 3:00 A.M. on March 18, 1942, Ruth died without convulsions. Robert died on the way to the hospital at 7:00 A.M., less than 24 hours after drinking the milk.

All the persons involved had been accustomed to drinking goat milk daily. The owner, mother of Ernest H., recalled that the animal had had a scratch on a teat two weeks previously.

* Taken mainly from the formal report of the district health officer.

This had been treated with a carbolic salve until March 15, 1942.

Chemical examination of the viscera of the goat and of these two children failed to detect any type of recognizable poisons which might have given rise to the gastrointestinal symptoms. Tests for fluorides, oxalates, arsenic, mercury, and other heavy metals were made.

Gross Pathological Findings—The significant gross findings in the goat were limited to the udder, one side of which was greatly swollen, red, and firm. The teat from this side had been removed post-mortem, presumably by the local veterinarian who had been consulted concerning the cause of death. An incision into the swollen side revealed marked congestion with numerous dilated lactiferous ducts containing a light reddish-brown fluid suggestive of bloody milk. No definite grossly visible abscesses could be found. The kidneys showed a small amount of cloudy swelling.

In the two fatal human cases the hearts, lungs, livers, spleens, and kidneys showed no significant demonstrable gross abnormalities.

Microscopic examination — (Goat) The sections of the udder showed numerous small abscesses containing Gram-positive cocci. In many areas the lumina of the lactiferous ductules contained purulent material composed of polymorphonuclear leucocytes and many Gram-positive cocci. The liver showed a moderate amount of fatty degeneration around the central veins but no abscesses or focal collections of leucocytes were found. Sections of the kidneys showed necrosis of the tubular epithelium in the cortical portion with cell outlines being completely obliterated. The glomerular loops contained a moderate number of polymorphonuclear leucocytes. There was a diffuse polymorphonuclear infiltration between the tubules in the cortical region. There was only an occasional sub-capsular collection of leucocytes suggestive of beginning abscess formation.

(Children) The lungs showed a moderate amount of pulmonary edema with marked congestion of the alveolar vessels. In a few areas there appeared to be definite hemorrhages into the alveolae. The heart showed no demonstrable histopathology. There was a small amount of leucocytic infiltration—mainly polymorphonuclear—in the peri-portal areas of the liver with a moderate amount of fatty degeneration around the central veins. There was a slight increase in the nuclear content of the glomerular loops but no cortical necrosis as was seen in the goat kidneys. The cortical necrosis reported [6-10] to be found in the kidneys of animals dying from the effects of Staphylococcus toxin was not present in the organs from the children.

Bacteriological examination—Smears made directly from the part of the udder showing the mastitis revealed myriads of Gram-positive cocci in clusters. The organisms appeared to be as numerous as found in a full grown fluid culture of *Staphylococcus aureus*. Plates streaked for isolated colonies revealed enormous numbers of colonies of hemolytic *Staphylococcus aureus*. No other type of organism was found by smear or culture.

By careful aspiration and by making several sections through the udder it was possible to obtain about 10 ml. of light reddish-brown fluid suggestive of blood tinged milk. This was used for animal inoculation. The material was centrifuged to obtain a supernatant fluid free of bacteria and leucocytes. Kittens injected with this material reacted with vomiting and diarrhea typical of the reactions described as being due to Staphylococcus toxin.*

* Monkeys were not available for testing the material although they would have been preferred. Fresh normal goat milk was likewise not available but the need for this was obviated as shown in the immunological data.

It would have been interesting, in the light of epidemiologic data, to have determined whether the enterotoxin in this supernatant fluid recovered from the udder was thermolabile or thermostabile. However, the amount of material available was not sufficient to test both its thermolability and its immunological properties. Since our main problem was to demonstrate whether such material from the udder might be related to the cases of intoxication, it was decided to use the material for the immunization experiment.

Immunological investigations—Staphylococcus toxin was prepared by growing the homologous strain in semi-solid agar under 20 per cent CO_2. The filtrate injected into kittens produced typical syndromes of vomiting and diarrhea. A series of 6 kittens was divided so that 3 were immunized over a period of 4 weeks by starting with small doses subcutaneously and gradually increasing the amount until 0.5 ml. amounts were given. The other 3 served as controls. At the end of this time they were tested for immunity to the toxic principle in the material taken from the udder. Three immunized kittens injected with the supernatant fluid of the material taken from the goat's udder did not develop any gastrointestinal symptoms. The 3 control kittens receiving aliquot portions of the supernatant developed typical reactions with vomiting and diarrhea in 1 to 2 hours.

DISCUSSION

The symptoms exhibited by the patients were typical of those which have been produced in human volunteers consuming known cultures of Staphylococci. The history of injury to the teat, the presence of an extensive acute suppurative mastitis due to *Staphylococcus aureus*, the reproduction of the symptoms in kittens, the immunization against this toxic material in the udder by using a filtrate of a culture of the homologous strain of *Staphylococcus aureus*, all indicate that the symptoms in the patients were due to the toxin of this organism. It is generally accepted by most investigators of this subject that a separate entity called enterotoxin is responsible for the symptoms of diarrhea, nausea, vomiting, and abdominal pain. Dack, *et al.* have not been able to produce gastrointestinal symptoms with filtrates not containing enterotoxin. However, this does not mean that under proper circumstances similar symptoms may not, at least sometimes, be effected by the so-called "lethal factor" which is thought to be responsible for the death of rabbits when injected intravenously. Whether the symptoms of collapse and prostration are related in part or entirely to the vomiting and diarrhea or to the effect of the lethal toxin is not certainly known. The production of symptoms in Ernest H. 3 hours after drawing the milk suggests but does not prove that the toxin was present in the milk at the time it was drawn. The cortical necrosis in the kidneys of the goat were similar to the reactions previously described as resulting from injury by the toxin of *Staphylococcus aureus*. The pathological findings in the children under the conditions of examination did not reveal anything which could be logically considered the cause of death.

SUMMARY

Data are presented to indicate that 3 patients developed food intoxication by drinking milk of a goat suffering from an acute suppurative mastitis due to *Staphylococcus aureus*. Two of the patients (3 and 4 years old) died within 24 hours after each drank ¼ pint of the milk. Individuals consuming the cooked milk did not develop symptoms. The goat died within 24 hours after the milking related to the onset of symptoms. Material taken

from the udder post-mortem reproduced the symptoms in kittens. It was possible to immunize the kittens against this material by repeated injections of a filtrate from the homologous culture. The evidence suggests the possibility that if an enterotoxin was present it was thermolabile or that the lethal factor was responsible, at least in part, for the symptoms.

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Rationing Milk in New York City

Ernest L. Stebbins, M.D., Commissioner of Health of New York City, recently declared himself as being opposed to reductions in the current fluid milk consumption in New York City which may be contemplated under recent orders of the War Food Administration. Commissioner Stebbins stated that, in his opinion, cuts in current milk consumption should be made only as a last resort, and that no reduction should be made in the milk supply of schools and other institutions nor in the amount of milk sold at stores or through retail deliveries for home use.

If cuts in fluid milk consumption prove absolutely necessary, it was recommended that they should be made first through further reduction in uses for whipped cream, table cream, candy and frozen desserts. If still further reductions are absolutely imperative, a possible curtailment would be to take out from the fluid milk served to restaurants and soda fountains, even though this may affect the nutrition of some industrial workers.

Dr. Stebbins gave the following broad classifications of milk uses in New York City in order of relative importance:

	Number of Persons	*Quarts of Fluid Milk Daily*
1. Children in institutions (under 15 yrs. of age)	30,000	30,000
2. Penny milk and free lunch milk	.....	130,000
3. Balance of child population (under 15 yrs.)	1,413,000	1,060,000
4. Adults in institutions	50,000	30,000
5. Other institutional use (cooking, staff use, etc.)	.....	15,000
6. Balance of adult population	6,131,500	1,915,000
Total	7,624,500	3,200,000

Classification of Types of Milk Delivery Services in order of relative importance:

	Estimated Quarts Daily
1. To institutions	75,000
2. To schools (penny milk and free lunches)	150,000
3. To retail stores and direct to houses	2,545,000
4. To restaurants and soda fountains	430,000
Total	3,200,000

The Sanitary Privy and Its Relation to Public Health

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IN the early part of the 20th century it was discovered that the prevention or control of typhoid fever, diarrhea, dysentery, hookworm, and other enteric diseases was dependent upon the sanitary disposal of human excreta. The facilities developed to break the chain of transmission of these diseases between the patient or carrier and the susceptible host were sewerage systems, septic tanks, and sanitary privies. In areas where sewers or septic tanks were impracticable, sanitary privies came to be recognized as essential facilities in the protection of the public health.

During the period 1910 to 1913, state boards of health became active in the control of hookworm. These agencies were assisted by the U. S. Public Health Service and volunteer health organizations. The Rockefeller Sanitary Commission, which was established in 1909 to combat hookworm disease, sponsored hookworm control programs in the South. Sanitation and infestation surveys made in 11 southern states confirmed the presence of hookworm disease in every one of the 700 counties investigated, and indicated that soil pollution was the chief factor in the spread of this disease. Programs for the control of hookworm disease followed these surveys. These programs involved free examination and treatment of patients, installation of sanitary privies, and promotion of their use. Emphasis was placed on the use of sanitary privies as a means of protection against typhoid fever and dysentery as well as hookworm disease. Concurrently the Public Health Service carried on rural sanitation demonstration projects.

In 1914–1917, Dr. L. L. Lumsden of the Public Health Service and his coworkers made house-to-house sanitation surveys in 18 representative counties in 16 states, the work being financed by a federal appropriation. These rural sanitation enthusiasts convinced local authorities in West Virginia, Indiana, Washington, and other selected states that sanitary privies were a good investment. As a result, local funds were provided for employment of public health personnel whose major duty it was to see that throughout the community human excreta were disposed of in a sanitary manner. This rural sanitation activity provided the groundwork for organization of the early full-time county health units in the United States. Thus, the lowly privy may be considered a primary factor in the development of a movement of tremendous health significance to the nation as a whole.

The public health personnel with experience in the conduct of such rural sanitation projects served as the nucleus for the extra-cantonment sanitation program during World War I. There were at that time few well organized state and local health departments;

hence the Public Health Service assigned medical and sanitation personnel to the extra-cantonment zones. It was one of their duties to organize and direct local efforts toward obtaining safe water, safe milk, and, above all, sanitary disposal of human excreta. The construction of several thousand sanitary privies was a major part of this program. In addition to protecting the health of the armed forces and civilians in the war areas, perhaps the most significant result of this close coöperation between the Public Health Service and state health departments was the further stimulation of the development of full-time local health services.

During the interval between the first World War and the economic depression in the early 1930's, state health departments were strengthened, additional local health services were organized, and sanitary privy construction was carried on as an important function of these agencies. Plans, specifications, and regulations governing the construction and maintenance of septic tanks and sanitary privies were developed. Personnel were assigned to conduct sanitation surveys and educational campaigns, enforce the sanitary laws where necessary, and supervise the construction of septic tanks and sanitary privies. Thus the foundation was laid for the future nation-wide privy construction program undertaken to protect the public health and give employment to relief labor.

In December, 1933, the Civil Works Administration was established to relieve unemployment. The U. S. Public Health Service recognized in this program an opportunity to improve rural sanitation work, and secured an allotment of CWA funds for the construction of sanitary privies. This was the beginning of the "millennium" for the men who had spent years in promoting construction of sanitary privies through education, exhortation, persuasion, and enforcement of sanitary laws. The CWA furnished the necessary labor, and property owners provided the materials. Technical supervision of the community sanitation projects was provided by the Public Health Service through personnel assigned to the state health departments. This program, although of short duration, demonstrated that the construction of sanitary privies was a desirable work-relief project in the field of public health. Similar community sanitation projects were continued under the Federal Emergency Relief Administration and the Work Projects Administration.

Observation of privies constructed prior to the inception of the federal work-relief program revealed that practically all pit privies had wood floors and risers which rapidly decayed and were difficult to keep clean. Recognizing the need for a more permanent type of construction, the Public Health Service developed a concrete slab and riser type of privy. A majority of state health departments either adopted this design or developed a similar type of concrete slab and riser earth pit privy. After observing advantages afforded by concrete slabs and risers a number of states made this type of construction mandatory. About 90 per cent of the privies constructed during the fiscal year 1939 under the Community Sanitation Program were of this type.

During the period from December, 1933, through June, 1942, 2,911,323 sanitary privies were constructed in 38 states and in Puerto Rico through the coöperative effort of the CWA, FERA, WPA, state health departments, and the U. S. Public Health Service.

To appreciate the magnitude of the Community Sanitation Program conducted by the work-relief agencies during the last 10 years it is only necessary to indicate the materials required and the funds involved in the construction of nearly three million privies. The

amounts of materials used were roughly as follows:

Lumber	1,000,000,000 bd. ft.
Cement	6,000,000 bags
Sand and gravel	1,000,000 cu. yds.
Reinforcing steel	12,000 tons
Roofing	110,000,000 sq. ft.
Nails	24,000,000 lbs.
Hinges	6,000,000 pairs

It is assumed that the average costs of material and labor were $15 and $20 respectively, and that supervisory costs were 5 per cent. On this basis it is estimated that the sum of $110,000,000 was expended for the construction of sanitary privies under the various work-relief programs. Of this amount, approximately $45,000,000 was provided for materials by the property owners concerned.

What benefits, in addition to affording employment to an estimated average force of about 15,000 men, accrued from this sizeable expenditure? Concurrently with the Community Sanitation Program remarkable progress was made in the construction of municipal water and sewerage systems, in milk sanitation, and in other aspects of environmental sanitation through the federal grants-in-aid system designed to further public health activities. Therefore, it is impossible to claim for any one activity a predominant rôle in the reduction of intestinal diseases. Nevertheless, in states such as West Virginia, Tennessee, North Carolina, and Mississippi, where the greatest number of sanitary privies were constructed, there were significant reductions in the incidence of typhoid fever, dysentery, and other intestinal diseases. In view of the large number of persons employed on the projects and the fact that in "selling" 3,000,000 privies it was necessary to explain to at least 15,000,000 persons the reasons why sanitary excreta disposal was essential to protect the public health, it cannot be doubted that the Community Sanitation Program contributed significantly to public understanding of the importance of this phase of environmental sanitation.

Further impetus to the sanitation of rural areas was provided by the Farm Security Administration, whose public health program was organized and directed by officers of the Public Health Service. The FSA realized that farmers ill with typhoid fever, dysentery, or malaria could not maintain adequate farm production or repay crop loans. Therefore, a farm sanitation program was organized, the basic elements of which involved provision of sanitary privies, safe domestic water systems, and screening of homes. Under this program approximately 92,000 sanitary privies were installed, 45,000 domestic water supplies were protected, and 58,000 homes were screened. Work was carried on in all 48 states, and, since the FSA assisted farmers whose financial resources were extremely meager, the work was done on properties where it was most needed and where sanitation paid the greatest dividends. Many of the farms on which improvements were made had previously lacked privies of any kind. State and local health departments participated in the FSA program, and their policies were adhered to and respected by the federal agency.

During the present emergency state and local health agencies are in a much better position with regard to extra-cantonment sanitation than they were during the first World War. Sanitation personnel have been recruited and trained by the Public Health Service and have been assigned to the states to assist in maintaining and improving environmental sanitation in war areas.

Although outstanding progress has been made in the construction of sanitary privies, much remains to be done in providing sanitary excreta disposal facilities where water carriage sewerage systems are impracticable. Reconnais-

sance surveys made by the Public Health Service indicate that about 165,000 additional sanitary privies are needed in the war areas. Thus it is apparent that privy construction is an important part of the present extra-cantonment sanitation program. The 1940 census revealed that there are 14,778,360 rural homes in the United States. Of these, 9,631,762 are served by outside toilets and 907,923 have no toilet facilities. The 3,000,000 privies constructed under the work-relief programs, and 50 per cent of the remainder of the privies serving rural homes, or a total of about 6,300,000, now are assumed to be reasonably satisfactory. On this basis it is conservatively estimated that more than 4,000,000 additional sanitary privies are needed in this country. The construction of these basic sanitary facilities should be included in any post-war public works program which may be instituted to relieve unemployment. In any event, after the present emergency, state and local health departments should assign sufficient personnel to rural sanitation activities to conduct educational campaigns, to secure the enactment and enforcement of adequate sanitation ordinances, and to provide sanitary excreta disposal facilities for about 16,000,000 people now without these fundamental necessities.

The sanitary privy has a definite relationship to public health and in this connection the following points are significant:

1. In areas where water carriage sewerage systems are impracticable the privy is the facility relied upon to break the transmission chain of intestinal diseases.

2. Privy construction programs, originally undertaken in the hookworm and typhoid fever regions in the South thirty years ago, contributed substantially to the early development of full-time local health services. At present more than 1,800 counties in the United States have such services.

3. The 3,000,000 sanitary privies constructed under the various work-relief programs have had an important effect in reducing the incidence of intestinal diseases.

4. The close association of U. S. Public Health Service officials with state health departments in rural sanitation campaigns over a period of 30 years has been instrumental in developing the *esprit de corps* which now enables local, state, and federal health services to cope successfully with problems of sanitation, malaria, venereal disease, and industrial hygiene in critical war areas in America today.

5. The fundamental principles of federal-state coöperation, successfully demonstrated in the rural sanitation programs, are now being applied throughout the field of public health. In addition, coöperative plans for public health work among selected population groups have been developed by the Public Health Service with other federal agencies. The Farm Security Administration's health and sanitation program is an example of federal coöperative health work.

6. Approximately 4,000,000 additional sanitary privies are needed to serve about 16,000,000 persons now without sanitary excreta disposal facilities, who for the most part reside in areas having the highest incidence of typhoid fever, dysentery, and hookworm.

Further Studies on One Type of Paracolon Organism*

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FOR many years continental bacteriologists, including the English, have considered the paracolon organisms as a group intermediate between the coliform and *Salmonella* bacteria. Topley and Wilson (1938) say of the paracolon group, "Certain of these species are definitely pathogenic for man. Others are under suspicion in this respect. Others again are almost certainly non-pathogenic." Stuart *et al.* (1943), after studying 465 paracolon cultures, isolated for the most part from gastroenteritis patients over a period of 4 years, came to identical conclusions. These investigators found that the paracolon group, like the coliform bacteria, could be divided into three sections: paracolon *Aerobacter*, paracolon intermediates, and paracolon *Escherichia* according to their IMViC reactions. Each section was again divided into a number of biochemical types according to their carbohydrate reactions.

Of all cultures studied biochemical type 32011,† a paracolon *Aerobacter*, offered the best evidence for pathogenicity. Thirty-one of the 35 strains investigated were isolated from gastroenteritis patients and 4 from food handlers in one or another institution in which the strain had been isolated during so-called food poisoning epidemics. In the course of 5 weeks in the Rhode Island Hospital 4 patients listed as "typhoid suspects" yielded almost pure cultures of biochemical type 32011 from the feces and one a pure culture from the blood.

At the April, 1942, meeting of the New England Health Institute the senior author read a paper on the paracolon group, emphasizing the probable pathogenicity of biochemical type 32011 (hereinafter called bio-type). Within one year 114 strains of this organism were received from a number of New England laboratories.

Bio-type 32011 ferments glucose, maltose, mannitol, and frequently salicin, in 24 hours. Strong acid reactions (brom cresol purple indicator) and 20 to 30 per cent gas are produced in glucose and, when positive, in salicin. In maltose, however, a moderate acid reaction with or without a bubble of gas and in mannitol a moderate to strong acid reaction and a bubble to 10 per cent gas are produced in 18 to 24 hours. Lactose and sucrose are fermented slowly or not at all; some strains ferment one or another or both of these carbohydrates in about 6 days and other strains only after 3 to 4 weeks. Some strains ferment salicin rapidly, others slowly, and some are negative. Growth, usually of the beaded type, occurs on citrate agar in 5 to 30 days

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† Biochemical type 32011 was previously described by Stuart, *et al.*, 1943. After their paper was published it was found that cultures with the biochemical reactions of 32011 could be divided into several different serological types as shown in Table 1. Biochemical type 32011—serological type 32611, for example, means that cultures of serological type 32611 have all the biochemical reactions of 32011 but differ antigenically from 32011.

and the Voges-Proskauer reaction is positive though usually weak with freshly isolated strains. A great majority of strains are motile. The only nonmotile paracolon *Aerobacter* encountered among 343 cultures studied in this laboratory to date were not only bio-type 32011 but also sero-type 32611 (Table 1). (One previously reported nonmotile paracolon *Aerobacter*, bio-type 32821, Stuart, *et al.* (1943), was found to be bio-type 32011 and sero-type 32611.) Because of the relatively slow action on maltose and mannitol in 18 to 24 hours bio-type 32011 almost always can be distinguished easily from other paracolon types of any section.

Table 1 shows that 58 strains were sero-type 32011 while 21, 15, 9, 9, 7, 6, and 2 were sero-type 26311, 44311, 32611, 63511, 56211, 70811, and 64811, respectively. All eight sero-types possessed interlocking somatic, and in some instances flagellar, antigens. Three sero-types had minor, unlabeled somatic antigens in common with *Salmonella choleraesuis* and *Salmonella rubislaw*.

Twenty-two of the 149 strains did not belong to any of the eight sero-types. These strains, however, possessed antigens in common with one or another of the eight sero-types. Fourteen of them agglutinated to high titers with one or another of the eight antisera (five to the homologous titer) but in no instance was the homologous titer of any antiserum reduced upon adsorption.

TABLE 1

Serological Types of Biochemical Type 32011

	Sero-types								
	32011	*26311*	*44311*	*63511*	*32611* *	*56211*	*70811*	*68411*	*Unknown*
Number of strains	58	21	15	9	9	7	6	2	22

* = All strains nonmotile

Of the 35 strains isolated from gastroenteritis patients as mentioned above, 32 were antigenically identical or closely related. As new cultures were obtained, however, it was evident that bio-type 32011 was serologically heterogeneous. Biochemical reactions were of no value in establishing different sero-types in this bio-type. Several strains of bio-type 32011 agglutinated in serum dilutions of 160 and a number of others in dilutions as high as 1280 of 32011 antiserum, but failed to reduce the homologous titer when used to adsorb the antiserum. Antisera were prepared from one culture agglutinating to 160 and from one agglutinating to 1280. Thus two new sero-types were established. By agglutination and adsorption tests with the three antisera, and the preparation of additional antisera, eight sero-types were identified in bio-type 32011.

Of a total of 149 strains of bio-type 32011, 127 (85.2 per cent) fell into one or another of eight sero-types.

Unfortunately, adequate information could not be obtained about the source of all of the 114 new strains. Eighty-six were from gastroenteritis patients (81 from feces and 5 from blood), 7 from food handlers, 2 from apparently normal contacts of patients, 1 from milk, 1 from pastry, and 17 from fecal specimens of unknown history. Eleven strains of sero-type 32011 and 3 of sero-type 26311 were isolated from patients listed as "typhoid suspects" which, with the 4 previously cited, make a total of 18 strains of bio-type 32011 isolated from patients suspected of having typhoid fever.

DISCUSSION

Adequate methods for the accurate determination of the toxicity and pathogenicity or aggressiveness of the *Enterobacteriaceae* are lacking. Despite this the pathogenicity for man of certain

Salmonella and *Shigella* species is well established if for no other reason than by the large mass of *in vivo* evidence. The pathogenicity of other species in these genera has been questioned. Because, for example, *Shigella alkalescens* (Andrews 1918) has been isolated occasionally from normal individuals, it usually is considered nonpathogenic. Both Neter (1942) and Weil (1943), in their reviews on *Shigella* agree that sufficient evidence has accumulated to show that under certain conditions this species can cause gastroenteritis and other infectious processes.

In view of the foregoing it seems that the pathogenicity of paracolon bacteria will not be established easily. Some bacteriologists will concede that a paracolon culture and a *Salmonella* type with identical somatic antigens will possess the same endotoxins, but the two cultures may have entirely different aggressive properties. For paracolon cultures such as bio-type 32011 having no major antigens in common with *Salmonella* the evidence for pathogenicity must rest on the sources and frequency of isolations.

Where epidemics have occurred in institutions a careful search has nearly always located a food handler carrying the organism. In specimens from food handlers plated on eosin-methylene-blue agar bio-type 32011 comprised only a small fraction of the flora while specimens from patients after onset of symptoms usually gave almost pure cultures of the organism. The loss of symptoms coincided with the disappearance of almost pure cultures from the feces.

The close association of the organism with gastroenteritis is shown by the following example: In a neighboring hospital 28 cases of mild to acute gastroenteritis occurred among patients and staff over a period of several hours on one day. A milk supply was the only common factor other than water. The 48 hour milk plates which had been counted the day before the epidemic had not been discarded, and isolations were made from these plates. Because of the loss of personnel due to the war only 2 fecal specimens from patients reached the laboratory. Several cases were reported in the city, emanating from a restaurant using the same milk supply as the hospital. A fecal specimen from one patient and cream filling from pastry were sent to the laboratory. From the cases in the hospital and city, the milk plates of the hospital, and from the cream pastry organisms of bio- and sero-type 32011 were isolated. Two laboratory infections have been caused by this organism, one in a student frequently working with bio-type 32011 and the other in a technician washing glassware, who had an acute gastroenteritis attack 4 days after a number of broth tubes of this organism had been placed by mistake in a basket marked "nonpathogenic."

Each year for the past 7 years fecal specimens from about 50 normal students have been examined. A few paracolon cultures have been isolated from these specimens but never bio-type 32011.

It hardly can be coincidence that 116 bio-type 32011 strains were isolated from known gastroenteritis patients and 11 from food handlers involved in epidemics, or that the same organism was isolated from milk or milk products involved in an epidemic or that 18 strains were isolated from typhoid suspects.

SUMMARY—Strong evidence has been found of the pathogenicity for man of one type of paracolon *Aerobacter*.

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Neutralization of SK Murine Poliomyelitis Virus and of Theiler's Virus of Mouse Encephalomyelitis by Human Sera*

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IT is generally accepted that a majority of normal human sera contain substances which are capable of inactivating various strains of monkey poliomyelitis virus. It is also commonly agreed that the frequency with which such sera neutralize the virus tends to be appreciably higher than that observed with sera obtained from poliomyelitis convalescents. The nature of this phenomenon is by no means clearly understood. Nevertheless, the neutralization test has often been used in surveys as an epidemiological tool to indicate the distribution of latent immunity, and hence presumable exposure to the disease, in human populations.

The possible occurrence in human sera, both normal and convalescent, of similar neutralizing substances against rodent poliomyelitis virus was first explored with the murine Lansing strain. The work of Harford and Bronfenbrenner,[1] Kramer,[2] and Toomey and Takacs,[3] reflecting extensive experience with mice or cotton rat experiments, suggested that virucidal antibodies may develop, though not regularly, during convalescence from an attack of poliomyelitis. Somewhat analogous observations were recorded by Plotz, Reagan, and Hamilton,[4] who employed virus of the Lansing strain adapted to the Syrian hamster. Different conclusions, however, were reached by other authors, including Armstrong and his coworkers.[5, 6] Thus, while from 65 to 75 per cent of all human sera examined were capable of neutralizing the Lansing murine virus in intracerebral tests in albino mice, it appeared that the determining factor for the production of such antibodies was age rather than the individual's experience with clinically recognized poliomyelitis. A similar opinion was expressed by Hammon and Izumi[7] as well as by Turner and Young,[8] the former authors also stressing the difficulties which surround the interpretation of results obtained with a not too well adapted virus, such as Armstrong's mouse strain.

There seems fair agreement, then, that neutralizing substances against the Lansing murine virus are widely distributed among human beings, but that the presence of these substances is no reliable measure of known previous contact with the actual disease. In other words, the picture is very much the same as had previously been assembled

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from the prolonged study of neutralization tests with human sera, both normal and convalescent, against simian strains of poliomyelitis virus in rhesus monkeys. It may therefore be said that the neutralization test, carried out with rodent poliomyelitis virus, fails to offer any constructive aid in the diagnostic problems of the disease. By further implication it becomes apparent that tests of this kind are of little value in determining the etiological position within the poliomyelitis group of a given neurotropic murine virus.

Little information has yet been gathered on neutralization of the murine strain of SK poliomyelitis virus by human sera, normal or convalescent. In a previous communication [9] it had been reported that normal human serum (3 samples) failed to inactivate SK murine virus, whereas convalescent serum (1 pool) proved capable of bringing about partial neutralization of small doses of virus (2 m.f.d.). These tests were carried out in mice by the intraperitoneal method.

Comparable data referring to neutralization of Theiler's virus of mouse encephalomyelitis by human sera are very scanty. Following Olitsky's [10] original report that pooled convalescent serum possessed no neutralizing power against Theiler's virus, Young and Cumberland [11] recently stated again their inability to demonstrate any neutralizing capacity in either normal human sera or in sera from poliomyelitis convalescents. All of the above tests were carried out in mice by employing the intracerebral route for the injection of virus-serum mixtures.

In view of the limited character of these earlier observations, it seemed of interest to examine a larger number of human sera, both normal and convalescent, for their ability to neutralize SK murine poliomyelitis virus. Since the murine SK strain possesses a fairly high and uniform potency on intraperitoneal injection, the latter route was chosen for injecting virus-serum mixtures. At the same time it was thought advisable to review the possibilities of obtaining neutralization of Theiler's virus by human serum with the intraperitoneal method of testing. The reasons which prompted this reinvestigation were: (1) that it had been found difficult—if not impossible—to secure satisfactory evidence of neutralization of Theiler's virus, in intracerebral tests, by specific rabbit hyperimmune serum, whereas the same serum proved extremely potent in intraperitoneal tests; and (2) that by utilizing the intraperitoneal route for the injection of mixtures of virus and hyperimmune sera it had been possible to disclose the existence of a broad serological relationship between the various viruses belonging to the poliomyelitis group, i.e., Theiler's virus, SK murine poliomyelitis virus, MM murine poliomyelitis virus, and monkey poliomyelitis virus.[12, 13]

The results obtained in the investigation of the problems referred to above are presented in two sections of this paper.

EXPERIMENTAL

1. NEUTRALIZATION TESTS WITH SK MURINE POLIOMYELITIS VIRUS AND SERA FROM NORMAL INDIVIDUALS OR FROM POLIOMYELITIS CONVALESCENTS

Material—SK murine virus was harvested from the brains of paralyzed mice, representing the strain in its 219th and subsequent mouse passages. The sera comprised samples from both normal individuals and poliomyelitis cases and contacts. The normal sera were obtained from Beth Israel Hospital, New York, N. Y., or from the State Laboratory, Albany, N. Y. They had been inactivated for ½ hour at 56° C. prior to being used in routine Wassermann tests. The New York

TABLE 1

Neutralization of SK Murine Poliomyelitis Virus by Human Sera from Normal Individuals and Poliomyelitis Convalescents or Contacts

Type of Serum	*Number of Sera*	*Positive*			*Negative*
		20 m.f.d.	*10 m.f.d.*	*1 m.f.d.*	
Normal urban population	102	3	8	10	81
Normal rural population	30	0	0	1	29
Poliomyelitis cases (early)	10	0	0	2	8
Poliomyelitis cases (late)	9	0	0	1	8
Poliomyelitis contacts	16	0	0	2	14
Total	167	3	8	16	140

City sera came preponderantly from adult urban individuals, the Albany sera from adult persons with rural residence. The sera from poliomyelitis patients, or from healthy family members who had been in contact with such cases, had been collected by Dr. Gilbert Dalldorf during an outbreak of the disease in Westchester County in the fall of 1941; they included sera from both children and adults. Some patients' sera represented repeat samples taken during the early stages of the attack and again later in convalescence.

Methods—Undiluted sera were mixed with variable virus dilutions in a ratio of 1:10, yielding final dilutions of virus which were 10 times higher than the original test dilutions employed. Serum-virus mixtures were incubated for 1½ hours at 37° C. and then injected intraperitoneally, in a volume of 0.1 ml., into each of 3 young Swiss albino mice. Each test was controlled by including similarly incubated mixtures which contained the same dose of virus together with normal guinea pig serum. Normal guinea pig serum rather than saline was used since virus, in high dilutions, tends to deteriorate rapidly in salt solution, whereas serum affords some protection against this deterioration. All the sera were run against two initial virus dilutions, i.e., 1:10,000 and 1:100,000; one-half of the sera were also tested against initial virus dilutions of 1:5,000 and 1:500,000, respectively.

Absence or presence of neutralization was appraised on the basis of a simple system which allowed due consideration for any periodic fluctuations that might occur in the level of potency of the virus. This pattern was as follows:

Control Serum	*Test Serum*	*Result*
3/3	3/3	Negative
3/3	2/3	"
3/3	1/3 or 0/3	Positive
2/3	2/3	Negative
2/3	1/3	"
2/3	0/3	Positive
1/3	1/3	Negative
1/3	0/3	"

Numerator = number of mice paralyzed; denominator = number of mice injected.

Results—The ceiling of infectivity of the virus, under the conditions of the test, was in the neighborhood of 1:1,000,000 *final* virus dilution. In other words, up to and including this dilution, practically all of the control mice injected with mixtures of virus and normal guinea pig serum became paralyzed, whereas paralysis occurred irregularly with the next higher dilution. For the purpose of this test, therefore, a level of 1:1,000,000 *final* virus dilution was considered as repre-

senting one minimum fatal dose.* Table 1 will show the frequency and the degrees of neutralization obtained with the various human sera.

These figures demonstrate that the great majority of the sera examined possessed no neutralizing power whatsoever against SK murine poliomyelitis virus. Thus, of a total of 167 sera tested, 140 were completely negative while 27 were listed as positive. However, inasmuch as virus inactivation of only 1 m.f.d. represents a borderline phenomenon, with little or doubtful significance, there remain only 11 clearly neutralizing sera which were capable of inactivating 10 m.f.d., or in excess of 10 m.f.d., of virus. The latter sera were all encountered in a series of 102 specimens obtained from normal urban residents. The incidence of positive sera was therefore approximately 10 per cent for this particular series against about 6 per cent for the entire group. By contrast, the other two series, i.e., samples from normal rural residents or from poliomyelitis cases and contacts, were made up of sera which were essentially negative.

2. NEUTRALIZATION TESTS WITH THEILER'S VIRUS OF MOUSE ENCEPHALOMYELITIS AND SERA FROM NORMAL INDIVIDUALS

Material—The virus was the GDVII strain, originally received from Dr. Max Theiler of the Rockefeller Foundation. The strain has since been maintained in this laboratory by continuous transfer from mouse to mouse.[14] The virus was obtained from the brains of paralyzed mice, representing the strain in its 120th and subsequent passages. The sera were samples which had been submitted for routine Wassermann tests to the diagnostic services of either Beth Israel Hospital or Presbyterian Hospital. All sera had been inactivated for ½ hour at 56° C. The donors were presumably all residents of New York City.

Methods—Neutralization tests were performed in young Swiss albino mice, using either the intracerebral or intraperitoneal route for injection of the virus-serum mixtures. Thirty sera were examined by the intracerebral method and another 100 sera by the intraperitoneal method. For the intracerebral test the undiluted sera were mixed with virus dilutions varying from 1:1,000 to 1:1,000,000 in a ratio of 1:10; the mixtures were held for 1½ hours at 37° C. and were then injected intracerebrally into each of 3 mice in a volume of 0.03 ml. For the intraperitoneal test, serum-virus mixtures were prepared by combining undiluted serum with a standard virus dilution of 1:10 in equal proportions; after incubation for 1½ hours, the mixtures, in a volume of 0.4 ml., were injected intraperitoneally into each of 3 or 5 mice. The level of 10^{-1} virus dilution was chosen because, although paralysis occurred occasionally with smaller doses of virus, it represented the only dilution which paralyzed mice fairly regularly upon intraperitoneal injection.* Adequate controls consisting of virus in combination with either normal adult mouse serum, normal guinea pig serum, or normal rabbit serum accompanied both series of tests.

Results—Of a total of 30 normal human sera examined, not a single specimen was capable of inactivating Theiler's virus in intracerebral tests. Inasmuch as the amounts of virus used extended well into the range of border-

* Current passages of SK murine virus (300th and subsequent passages) titrate about 10 times higher intraperitoneally.

* The intraperitoneal infectivity of the virus, at the indicated level, was well maintained over serial passages throughout the year, except during the summer months. Attempts to run additional tests between June and September had to be abandoned, in two successive years, because of loss of potency or marked irregularities in the intraperitoneal titer of the virus.

line infectivity, as determined by the response in control mice, the lack of neutralization cannot be attributed to excessive dosage of virus. Different results, however, were obtained in intraperitoneal tests, as will be gathered from Table 2. If neutralization be considered positive in case none of the mice receiving a particular serum-virus mixture developed paralysis, whereas between 60 and 100 per cent of the control mice receiving normal cotton rat, rabbit, or guinea pig serum-virus mixtures became paralyzed, it will be found that of a total of 100 normal human sera examined 9 neutralized Theiler's virus. An additional 4 human sera may have possessed slight virucidal power since more than three-fourths of the injected mice remained free from paralysis; but in view of the fact that the mortality among control mice varied from test to test and rarely reached the 100 per cent level, it would seem safer to ignore the latter reactions at present. The neutralization observed with the two normal adult mouse sera is, of course, characteristic of this virus and in line with previously established facts.

TABLE 2

Neutralization of Theiler's Virus of Mouse Encephalomyelitis by Normal Human Sera (Intraperitoneal Test)

Series	Sera	Incidence of Paralysis as Observed with Individual Sera									
		3/3	2/3	1/3	0/3*	5/5	4/5	3/5	2/5	1/5	0/5*
I	30 normal human sera	5	11	8	6						
	2 normal rabbit sera					0	1	1	0	0	0
	1 normal adult mouse serum					0	0	0	0	0	1
II	15 normal human sera					0	3	3	4	3	2
	1 normal rabbit serum					0	1	0	0	0	0
	1 normal cotton rat serum	1	0	0	0						
III	15 normal human sera					13	1	0	1	0	0
	1 normal rabbit serum					1	0	0	0	0	0
	1 normal guinea pig serum					1	0	0	0	0	0
IV	40 normal human sera					30	7	1	0	1	1
	9 normal rabbit sera					8	1	0	0	0	0
	9 normal guinea pig sera					9	0	0	0	0	0
	1 normal adult mouse serum					0	0	0	0	0	1
Total	100 normal human sera	5	11	8	6	43	11	4	5	4	3
	2 normal adult mouse sera					0	0	0	0	0	2
	24 normal sera from rabbits, guinea pigs, or cotton rats	1	0	0	0	19	3	1	0	0	0

* Numerator = number of mice paralyzed; denominator = number of mice injected.

DISCUSSION

The results obtained in this study reveal that in the neighborhood of 6 per cent of all human sera examined, normal or convalescent, were capable of inactivating SK murine poliomyelitis virus. This percentage of neutralization is substantially lower than has been recorded for the Lansing strain. It is impossible to say at present whether this difference is due to technical reasons—greater uniformity in virus activity and more rigid interpretation of the results—or to a more limited dissemination of the SK strain as an immunizing agent among human populations. While the actual percentage of positive sera was very low indeed, nevertheless the data follow a trend which has been firmly established by previous experience with simian strains of poliomyelitis virus; thus, the peak frequency of neutralization, i.e., about 10 per cent, occurred in a group of normal adult urban sera. Inasmuch as none of the sera examined here had been tested for virucidal power in monkeys, no basis exists which would allow a point for point comparison. It

may be of interest, however, in this connection to mention that one of the children included in the group of healthy contacts apparently carried active poliomyelitis virus as shown by the development of paralysis in one monkey following intracerebral injection with Duponol-treated feces collected from this individual. In spite of such proven carriage, no virucidal substances could be detected in the serum of this child.

Our observations relating to Theiler's virus harmonize with earlier reports to the extent that they confirm the inability of demonstrating the presence of any virucidal antibodies in normal human sera by intracerebral tests in mice. They differ significantly, however, from the current belief that such sera fail altogether to neutralize Theiler's virus, since definite neutralization occurred in about 9 per cent of all sera tested, provided the tests were carried out with the intraperitoneal method. The above figure represents the average from four individual series of tests. These series differed among themselves not only in technic (in series I, 3 mice were employed for each sample of serum as against 5 mice in series II–IV), but they were also subject to considerable variations (60–100 per cent) in the infectivity of the virus for controls. Had it been possible to standardize the test by using throughout virus of maximal potency with a uniform technic, an appreciably lower over-all percentage of neutralization would probably have been recorded. The data collected here, therefore, make no claim to be statistically valid. They seem to indicate, however, that a small fraction of normal human sera carry substances capable of inactivating Theiler's virus. The selectivity of this neutralization contrasts sharply with the regularity with which normal adult mouse sera neutralize the same virus.

Two alternate hypotheses suggest themselves for the interpretation of the above data. One, that Theiler's virus may, on occasion, operate as a specific immunizing agent among human populations as it does so regularly among mice; the other, that the virucidal action of normal human serum is due to a nonspecific principle which acts in a similar manner on both monkey and rodent strains of poliomyelitis virus. Whatever the correct explanation, the findings reported here furnish additional evidence of the intrinsic relationship that exists between the various simian and rodent viruses that belong to the poliomyelitis group.

SUMMARY AND CONCLUSIONS

1. Among a total of 167 human sera, normal or convalescent, which were examined for their ability to neutralize SK murine poliomyelitis virus in intraperitoneal tests in albino mice, 11 were found to neutralize this virus. These neutralizing sera occurred all in a group of 102 normal sera obtained from urban residents.

2. A total of 30 normal human sera were examined for their ability to neutralize Theiler's virus of mouse encephalomyelitis in intracerebral tests in albino mice. None showed any neutralizing power.

3. Among a total of 100 normal human sera obtained from urban residents, which were examined for their ability to neutralize Theiler's virus in intraperitoneal tests in albino mice, 9 were found to neutralize this virus.

4. The significance of the above findings is discussed in the light of the available data on the neutralization of simian and murine strains of poliomyelitis virus by human sera.

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Wartime Health Education in Secondary Schools

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SECONDARY schools today have become the nation's most vital centers in the preparation of youth for wartime services. It is generally agreed that a basic part of this preparation should be to help youth to become physically and mentally fit for the rôles they will play as members of the armed forces, or as workers in industry, agriculture, and in community service. For those high school youth who already are engaged in wartime services the need is immediate and urgent. For youth in training for some future service, health preparation should become an essential part of the training.

In recognition of the need for increased attention to fitness of youth, the U. S. Office of Education, in the fall of 1942, called together two committees to consider the problems involved and to outline appropriate suggestions for action. These committees consisted of leaders from the fields of health education and physical education, and representatives from the Army, the Navy, the Public Health Service, the Children's Bureau, and the Office of Education. Out of the deliberations of these committees, two manuals were prepared. The first, *Physical Fitness through Physical Education for the Victory Corps*,[1] was published early in 1943; the second, *Physical Fitness through Health Education for the Victory Corps*,[2] has recently come off the press.

The first manual, as its name implies, outlines physical education activities for high school boys and girls, especially adapted to wartime requirements. The program proposed in the manual was one immediate answer to the demands of the military services for young men who possess the "strength, stamina coördination, endurance, and agility" required for efficient performance, and even for survival, in combat duty. The strenuous physical activities outlined are for healthy boys and girls. As a guard against indiscriminate participation by those unfit for such activity, a carefully worded chapter was prepared by the Public Health Service on "Selection of Pupils for Training." As a guard, also, against any tendency to consider this a total physical fitness program, a section is devoted to a brief discussion of other phases of the school program which help in the development of physical fitness.

Since the physical education manual is now well known, discussion here will be limited to the considerations of the health education committee and the manual which was the outgrowth of these considerations.

The job before the Committee on Wartime Health Education for High Schools was clear. Six and one-half million young people are in secondary schools today, 6½ million pupils who are the nation's major source of wartime man power. What immediate action could the schools throughout the nation take toward producing "the

sound and well functioning bodies, the wholesome attitudes of mind, and good habits of living necessary to the development of physical strength and endurance and the specific knowledge and skills demanded of youth" today?

Obviously, more is needed than an expansion of health services and medical care programs, important as these are. Moreover, under wartime conditions professional health and medical services may necessarily be curtailed rather than increased. Yet here is a group of young people suddenly faced with adult responsibilities. The secondary school health program must be concerned not alone with doing something for them. It must give them opportunity to act for themselves—to develop in themselves a responsibility for their own health and the protection of the health of others. This is important not only in relation to general measures for health protection and improvement, but also as preparation for specific wartime services, whether civilian or military. High school boys and girls need experience in identifying sanely their own health problems, the health problems in their schools, homes, and community, and those in the services for which they are preparing. They need also experience in learning how to meet these problems intelligently. Sound health education is essential to accomplish these results.

This, then, was the task of the committee—to give what stimulus it could, through the medium of a wartime manual, to the development of more adequate and more dynamic health education in secondary schools in accordance with wartime needs. The committee, though focusing on the special contributions of the school, recognized that health education responsibilities in respect to secondary school problems must be "shared by all members of the school staff as well as by health departments, medical groups, parents and others in the community." Fully as important, it recognized that no manual, however much it reflected the best thinking on a problem, could in and of itself be the magic wand which would effect health improvement. The desire for improvement and the will to act must be within the local communities themselves. A health education manual prepared for nation-wide use could at the most be only supplementary to local action. It could help direct attention to major problems in wartime, but even these vary widely in different sections of the country and in different communities. It could suggest specific courses of action to meet common problems, but here again the steps developed locally through coördinated planning are those which are likely to work best because of their local applicability.

The health education manual thus prepared within these recognized limitations is designed to serve as a curriculum guide for teachers, and as a source of ideas for administrators who are responsible for putting health education programs into action. Six major health objectives were selected for emphasis in the manual. They are: correction of remediable defects, prevention and control of disease, better nutrition, prevention of accidents, efficient daily routines and sound mental attitudes. There is nothing new in these objectives. They are as important in peace as in war. Certain aspects of each, however, when considered in a wartime setting have potential value in motivating young people for better health behavior. Consequently, for each objective pertinent information on the problem as it relates to high school youth in wartime is given, and "suggestions for action" which are in fact ideas that may be incorporated in a health instruction program by direct or integrated teaching.

An important section of the manual

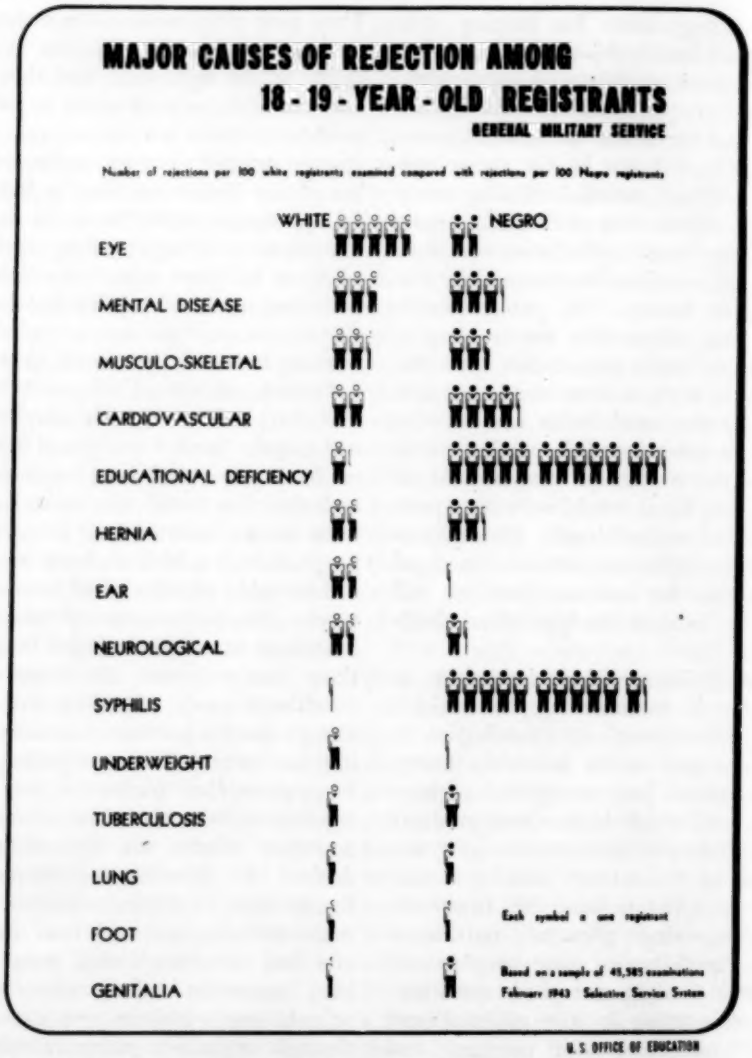
contains suggestions for helping students meet health objectives for special wartime services. Material appropriate for use in preinduction training in health and sanitation for military services was contributed by the Army and Navy. Other material dealing with health problems now confronting youth in industry and agriculture was furnished by vocational leaders and by the Children's Bureau. A public health nurse was responsible for a chapter devoted to health preparation for community services, such as child care and clinic services and home care of the sick. No attempt will be made here to outline the content of the manual in any detail, for it would only be repetitive of the manual itself. Illustrations from the fields of nutrition, and of preparation for military services will suffice to indicate the type of emphasis given.

The significance of good nutrition as a factor in maintaining the nation's man power through its contribution to efficiency and health is widely recognized today. Less recognized perhaps is the part which high school students can play in a broad nutrition program. It was the committee's belief that student participation may be threefold: (1) improving personal nutritional status by following day by day the practices leading to good nutrition; (2) coöperating in the national and home food conservation program, and (3) assisting with such wartime nutrition programs as group feeding or school lunches.

Many high school students today are doing most of the family food shopping and cooking. Therefore, the committee felt that a practical health education program in the school should give students knowledge and training to assume this responsibility with efficiency. For example, students may design a meal record card to use in appraising their own or their family's eating habits. They may plan meals for members of the family working in the "swing shift" or the night shift, and they may demonstrate the packing of a suitable noon-hour lunch for themselves, for a younger brother or sister, or for a member of the family working in industry. An appropriate school or home activity for students living in congested war areas, or for those soon to be living on their own would be to plan and prepare simple meals that require minimum working facilities, little work space, and a limited amount of time. Activities like these, if intelligently carried out, will require careful study and research on food values and food requirements, and thus have real educational value.

In the nation-wide food conservation program high school students may find a thoroughly practical field for wartime service, the performance of which will contribute in a realistic way to their own, their family's, and the community's nutritional needs. Growing and using victory garden products; canning, drying, and storing foods; preparing foods to conserve their food value and learning how to buy wisely, are all tangible activities suitable for high school students. To illustrate, students may figure how to plan nutritious meals under rationing and with food shortages and find it as much of a game as the busy housewife does a puzzle. In some schools such projects are carried on through organized groups, as the Victory Corps, in recognition of the need at this age level for doing things together with others of the same age or interests.[3] In the health education manual are found many suggestions for student participation in worth while nutrition projects such as these just described.

"The problems inherent in military life indicate that pre-induction training in health and sanitation will be of definite assistance. This opinion represents the thinking of military officers with field experience as well as those



charged with training responsibilities. Time is restricted in the Army and Navy for the teaching of health. Consequently, any reinforcement which can be given to this instruction prior to entrance to military services will be of great aid."

Five fields of training as suggested by Army and Navy representatives are discussed in the manual. They are:

1. A knowledge of the body with emphasis on organs especially susceptible to disease and injury.

2. A knowledge of the common communicable diseases, and steps needed for group and individual protection against their spread. Development of a readiness to coöperate in disease control measures.

3. Development of attitudes and skills needed to prevent accidents and to give emergency care.

4. An adjustment to military life which will involve willing acceptance of responsibilities and coöperation with other men in all activities.

5. Intelligent action in respect to other problems of military hygiene that will result in protection and promotion of individual

health and in the maintenance of group health.

These fields, similar in many respects to the objectives outlined previously, were determined through an analysis of military needs, and represent a common denominator as valuable in the training of an infantry gunner as of a pilot. In certain services, such as the air corps or tank corps, special health training may be needed over and above the basic training, however.

The differentiated kind of instruction believed desirable as a background for those soon to enter the armed services can be well illustrated in connection with education in the prevention and control of disease. All high school students, the committee felt, need instruction in regard to such specific diseases as the common cold, tuberculosis, malaria, smallpox, syphilis and gonorrhea, typhoid fever and typhus, all of which may have special significance in wartime and an understanding of which will give concreteness and reality to the cause, spread, prevention, and control of diseases in general. As a part of preinduction training, however, additional problems particularly pertinent to military life need emphasis. These include: (1) understanding of conditions which exist at training centers and at the battle front that are conducive to the spread of infections; (2) understanding of measures taken to protect the men and women in the services and consideration of how one may coöperate in these measures; and (3) special responsibilities of the individual soldier or sailor on field service in such matters as purification of water supplies, sanitary disposal of body wastes and self-protection from disease-carrying insects. Many details in regard to such problems will wisely await instruction after induction. However, a degree of conditioning now should help create a willingness on the part of future inductees to coöperate in the military health program. According to the committee, worth while experiences for the students while still in school may include assistance to local health departments in disease prevention and control activities, and also week-end field marches and camping trips under trained leadership during which principles of sanitation and personal conduct required of military men may be applied.

Another preinduction problem of major concern is the development in men and women of the ability to maintain sound mental attitudes in situations which are inevitable in military life. Young people need to learn how to face facts realistically and to become aware of situations they must meet, as well as of possible ways of adjusting to and finding their places in the armed services. This of course is equally important in civilian life. The times demand that young people grow up quickly. The school program as indicated earlier, must therefore provide opportunity for them to make decisions and take responsibilities. The health education manual contains many suggestions for ways of doing this in respect to the solution of health problems. Guidance counseling to help each find the place where he can most effectively serve in the war program is also essential. A recent Victory Corps publication [4] deals with this problem in detail.

Administrative provisions generally recognized as essential for effecting a dynamic health education program were outlined in the manual by the committee. Briefly summarized they are:

1. *Fixing responsibility*—Acting on the belief that "what is everyone's business soon becomes no one's business," the committee recommended that in each school "one person be given the responsibility for coördinating all school health activities and for relating them to other health activities in the

community. The individual chosen for this task may be the school medical adviser or nurse, or the best qualified teacher available. Whoever is selected should be given time for this work and should have the support and advice of a school health committee.

2. *Providing time and opportunity for health instruction*—In order to accomplish this important wartime job of helping young people become fit, as well as of laying the foundation for future good health, there is great urgency for carefully planned instruction based on the needs and interests of the students. Students during the 9th and 10th grades need orientation in the high school health program. They need assistance in analyzing their own health problems and in working out plans for personal health improvement. During the 11th and 12th years they need, in addition, help in planning ways of living which will enable them to meet the demands of adult life, and now particularly to meet health and safety problems associated with military services, industry, agriculture, and community services. Direct health teaching, the committee believed, is essential in order to fulfil these responsibilities. Ample preparation, they stated, would involve 5 periods of direct teaching per week, or the equivalent, for at least one semester during the 9th or 10th grades, and a similar amount of time again during the 11th or 12th grades. In addition, implications for health teaching should be fully explored in all subject matter fields.

3. *Finding health needs and problems and providing follow-up procedures*—Teacher observations, special tests, and medical examinations all aid in discovering individual health needs, and form an integral part of a functional health education program. With a depletion of civilian medical and nursing services, more and more responsibility for this phase of the health program is already falling on teachers. This fact makes it important that they receive instruction on how to observe students for deviations from normal health. In follow-up procedures special attention should be given now to students seeking to qualify for particular wartime services. A boy with marked visual defects, for example, should be discouraged from preparing to be a pilot. Students attempting some form of war work in out-of-school hours will require close observation and supervision to make certain this work is not proving detrimental to their health.

4. *Providing a school environment conducive to health*—Physical conditions of the school plant as well as the emotional atmosphere of the school have an influence on student health. These receive emphasis in the manual, but will not be summarized here.

5. *Training of personnel*—One of the greatest obstacles to an effective health education program is the lack of adequately trained teachers. The committee, accepting the fact that many schools will not have specially prepared health educators available, suggests specific ways in which persons chosen for the task may secure additional in-service preparation. Further and more detailed suggestions are contained in a recently published report of another committee appointed by the U. S. Commissioner of Education to consider this problem. This report, "Preparation of Teachers for the Program of Physical Fitness through Health Education" appears in the June 15, 1943, issue of *Education for Victory*, the official bi-weekly publication of the U. S. Office of Education.[5]

6. *Community relations*—The health education manual ends with many specific suggestions for contributions to the health education program by community groups.

In health education no activities of the school can be thought of as apart from those of home and community. Joint action, carefully planned, is paramount in the improvement of student health. In this action the health department should hold a prominent place through helping schools determine the most significant health problems which education can help to solve and through making its technical services available to schools for consultative services on technical matters, and for in-service teacher training.

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4. U. S. Office of Education. *Guidance Manual for the High School Victory Corps.* Victory Corps Series Pamphlet No. 4. Washington: U. S. Gov. Ptg. Office, 1943. 37 pp. 20 cents.

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Health Education in Action

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BEFORE April, 1942, Roberson Community, a typical rural Negro settlement in Bienville Parish, La., had barely utilized the services of the county health unit. Of the 55 families that made up this community, several had brought infants and youngsters to child health conferences; first graders had been visited annually by the Health Director for purposes of vaccination; some few had received typhoid vaccine, and a few others were undergoing treatment for syphilis. This constituted the total contact with the health unit. The majority of families were hardly aware of its existence. The fact that the health office was 40 clay-road miles distant, with only a part-time suboffice in the nearest town (6 miles away) did not help.

But one year later this same community had built its own health building, had someone from each family actively engaged in health work, and had changed the name of its school to include that of the new health clinic. The Roberson Colored School, center of community activities, is now known with pride as the Roberson Consolidated School and Health Clinic.

How was this change from comparative apathy to deep interest effected? Chiefly by drawing on the resources of the community itself and by accompanying every step of a planned health program with an educational campaign designed to make each community member "health-active" and "health-literate." Since this community is typical of many in the South, a study of how this program was put into action may stimulate health efforts in similar groups, and is hence reported in some detail.

COMMUNITY BACKGROUND

Roberson Community is composed of 45 families, numbering about 300 people. The homes and farms spread over several square miles of cotton country, with a central church and school which serve as assembly-places for this closely knit group. The typical head of family is a share-cropper or small independent farmer who has lived all his life in Louisiana, most of it in this community. He has a family of 4 or 5, and rarely sees more than a few hundred dollars each year in cash. He may own a few chickens and have his own garden. Sanitary conditions are inadequate—no bathrooms or indoor toilets—screening in only six of the homes—water drawn from wells often poorly constructed—milk unpasteurized. This composite picture is based upon social studies made of each family, the details of which were painstakingly gathered on form sheets by the Executive Health Committee which was elected by the community.

GROUNDWORK

The health clinic project in Roberson Community was a direct outgrowth of a parish-wide observance of National Negro Health Week (April, 1942). It has always been our policy to work very closely with the schools, both negro and

white. Through them, we are able to reach every family. In addition, we have the coöperation of leaders trained in technics of education and publicity. We therefore requested the Negro supervisor of schools to call together the parish faculty members, and we suggested to them a variety of suitable activities to be initiated by the schools in each community for Negro Health Week.

Reports on the week's activities were sent in to the health unit by 40 of the 56 Negro schools in the entire parish. The following is a sample report from the high school attended by Roberson Community children, among others.

I. Total communities participating	10
II. Total homes participating	78
1. Cleaned house	78
2. Cleaned toilets (others needed repairs, and promised to make them)	55
3. Repaired and built window screens	35
4. Repaired windows and built same	36
5. Repaired and built steps	43
6. Filled in low places	44
7. Planted flowers	60
8. Piled and hauled cans	77

Assemblies and discussions on "Health and the War," exhibits and playlets, and health sermons in church were other activities. To stimulate further interest, each school (negro and white) was asked to submit a prize essay on Immunization. Parish awards of $5 in War Stamps (donated by the local Tuberculosis Association) were given to the negro and white winners. Both essays were published in the County *Bienville Democrat*.

Interest in these various projects throughout the parish was so deep that we were encouraged to plan for a long-range program. We felt this could best be accomplished by a project in a selected community, using widespread publicity of its achievement as an incentive to other groups. Roberson Community was chosen because of its outstanding work during National Negro Health Week. It had already laid the groundwork for a long-range program by setting up adult health committees.

THE PROJECT IS BEGUN

The adult health committees were asked to prepare reports for the Health Day exercises at church. Some of the topics covered were "Need for use of more milk," "House care in contagious diseases," "Home gardens and the war." As Health Director, I was invited to give the health sermon. I analyzed the local health needs, and suggested that the community plan with us a year's program of health activities. To engage the immediate interest of every member I proposed that the community build its own health clinic. Besides "interest" value, this would enable the group to receive more intensive services and would eliminate the long trip to the county health office. This suggestion was accepted with enthusiasm.

The school, as center of the community life, became the leading spirit in the program. The principal of the school and an elected committee of five undertook to design the plan for the clinic building and to raise the necessary funds. After the plans were approved by the Director of the Division of Health Education of the State Department of Health, volunteers from the community did the actual work of building. The committee decided to tax each member 50 cents. Since it knew intimately every family involved, greater leniency was shown to larger families and to those with lesser means. Fund raising was made the occasion for education on the need for and value of health services. Group meetings were held in the church; moving pictures were shown; families were visited individually by committee members when questions were answered. The few "contrary" members were con-

vinced. It cannot be overemphasized that this tax meant a real monetary sacrifice. Some of the farmers sold chickens to get the cash. A sum of $75 was finally raised within the community. The balance needed ($25) was secured from white people of the parish who were sympathetic to the project.

The clinic is a one-room structure, located near the church and school, in the cotton-fields, and easily accessible from the highway. Although it was not until March, 1943, that the building was completely finished, with glass windows and paint, it was sufficiently set up within 3 months after the Health Day exercises to be put to use.

HEALTH SERVICES FOR THE YEAR

No one in the community was able to afford *adequate* medical care, as we had discovered from our family studies. Therefore, health services were planned for all. Community leaders interested the members and secured their coöperation. The record of services for the year is a tribute to their resources of enthusiasm and coöperation.

The schedules for examinations and meetings were posted in advance in the health building, and announced throughout the school. Despite heavy cotton-picking time, clinics were well attended. The health unit personnel (2 nurses, 1 sanitarian, 1 secretary) assisted with the work, as needed. For a 2 week period the services of a physician from the State Department of Health were secured and those of a mobile dental unit promised. Examinations were accompanied by recommendation for correction, with request that appointment be made with private physicians where correction was needed. Tonsillectomies and adenoidectomies, however, were arranged for with Shreveport Charity Hospital at no charge to the community. Twenty-eight (all that were needed) were performed. As a result of the tonsillectomies, 3 cases of hearing defect were also cleared up. The results of other activities of the unit are summarized in Table 1.

TABLE 1

Results of Work of Health Unit from April, 1942, to April, 1943

(Population of Community 300)

	Per cent of Total Number Done
General Physical Examinations	
Adults	65
Infants	100
Preschool children	90
School children	92
Special Examinations	
Chest x-rays (above 4 years of age)	75
*Wassermann tests on adults	65
Wassermann tests on high school students	100
Eye, ear, and dental examinations (children)	100
Immunizations (Program for children only)	
Smallpox	100
Typhoid fever	91
Diphtheria	100
Pertussis (infants under 1 year)	92
Regular Health Supervision	
Maternity cases	90
Infant and Preschool children	94

* 100 per cent of clinical cases under regular treatment
10 wells, 12 privies, and 3 houses were improved or rebuilt.

VALUES OF THE PROJECT

The community attained a new level of understanding and interest in public health work. Each aspect of the program was used as an opportunity for clarification and education on such topics as immunization, serological tests for syphilis, prenatal care, etc.

The community developed a set of health standards and a respect and pride in its own capacity for achievement of specific health goals. The concrete acquisition of a central health building directed the health planning into long-range paths. The following

excerpt from "next year's plans" recorded by the school principal shows how much this group can now do on its own.

> The committees are still functioning, along with another group that has been set up for this year. This latter committee is composed of school children located in different sections of the community, and we have 10 of them working in pairs, which make a total of 5 groups working the entire community. I have appointed them as leaders for their section. I have sub-divided the community into 5 health circles, and these girls will be busy, each pair in their respective districts trying to educate the people to the fact that it is necessary that they destroy all breeding places of flies and mosquitoes. We are giving prizes to the two girls who get the largest group of people to carry out these health objectives. Each two girls that are working together have 10 families or more under their care.

The interest of the white members of the parish was secured on the premise that health is indivisible; and that the health of any one family in a community is necessarily the concern of all. Articles in the county paper, reports to the elected governing body of the parish, and coöperative planning with the school board promised interest in the project. The work of the local Red Cross in helping set up nutrition classes under the direction of Negro high school teachers, the request of the governing body for a report of National Negro Week activities; the donation of an award for the winning Negro essay on immunization, and the contributions made toward the health clinic building, all attest to the growing interest of the entire community.

CONCLUSION

From our work in this project we are convinced that there are many untapped resources of initiative, enthusiasm, and coöperation to be drawn on in both negro and white communities for successful health service and education projects centered on local needs.

Post-War Malaria Prevention by the County Health Department

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THERE are large areas of the United States which have had known cases of malaria only infrequently during the past twenty-five years. These areas gradually became rid of malaria due to a combination of circumstances. Better farming and the passage of the small water-driven mill, together with increased efficiency of medical attention, have been factors. However, the present war is bringing about conditions which make it imperative that these large areas of the United States be reëxamined as to their potentialities for the spread of malaria.

The record of the last war gives us a lead as to what to expect during the course of and particularly following this war. During the last war very few American troops were engaged in any tropical territory. Our army fought in areas almost free of malaria and, as a consequence, we had no subsequent malaria problem. However, certain British and Russian troops fought in malaria infected areas. They took malaria to their homes, and the spread of the disease was recorded for the first time within the Arctic Circle in Russia.[1]

In this war tremendous numbers of American troops are fighting in areas heavily infected with malaria. It is a distinct possibility that a large portion of the American troops who go overseas will spend at least some part of their service in tropical areas where they may well become infected with malaria. This being the case, it behooves those of us in places where malaria does not ordinarily occur to be thoroughly familiar with the potentialities.

The first consideration is the possibility of the return to the United States of troops still harboring the malarial parasites. This brings up the question of the efficiency of the present treatments for malaria. There are three drugs of value: quinine, atabrine, and plasmochin. These drugs admittedly do not give us adequate control over the disease. Relapses are frequent and unpredictable.

A good illustration of the fact that troops do and will return still harboring the malaria parasite is the experience at the Moore General Hospital at Swannanoa, N. C., which is about six miles from Asheville. In a small contingent of injured troops returning from the South Pacific, 42 men had malaria infection as shown by blood smears.[2] These 42 cases were distributed according to type as follows: P. vivax—30, P. falciparum—3, P. malariae—1, and unidentified or unclassified—8. Twenty-six of the 42 men had attacks while they were at Moore General Hospital. Ten of this 26 had their first attack while they were here. One additional soldier had his first attack while enroute two days before arrival. The remaining 15 attacks represent relapses. It is interesting to note that in one of the cases of P. vivax infection the individual had his first attack 4 months after leaving the South

Pacific. Thus in a small group of soldiers, 42 were infected with malaria and 26, or more than half, had either their first attack or a relapse after reaching this country. In fact, there was an average of 4.5 relapses per patient. One patient has already had 12 relapses. If this is a sample of what will occur in the remainder of the war, it will be a small county indeed which will have as few as a hundred cases of malaria among returning soldiers.

The second condition, and perhaps the more important one, is the potential means of spread of malaria from the infected reservoir to the general population. It is at this point that the problem demands the close scrutiny of the health department. Even though his estimate may be in error, the health officer owes it to himself and to his community to make an estimate of the potential danger in his community. For his own protection he should make this estimate a matter of record and present it to his local board of health.

Before going into detail in the discussion of this estimate, it might be well to consider one additional factor present in areas where little or no malaria has occurred in recent years. That factor is the lack of familiarity of the practising physicians with the disease of malaria. Lest it seem farfetched to think that physicians might not be on the watch for this disease, let me cite an example. A relative of mine was trained as a laboratory technician in a part of the South where malaria is not uncommon. Later she was employed in a large New York hospital where she became ill. She had the usual attacks of chills, fever, and prostration. Numerous specialists were called in, but none made a diagnosis. During her periods of prostration she was completely out of her head. In between her attacks she called for a microscope and blood smear and made her own diagnosis. As it happens, she contracted malaria in the New York harbor while visiting friends aboard a boat which had just returned from the Caribbean. She was bitten by a mosquito on this boat.

In making a survey of any area it is necessary to have exact knowledge concerning the distribution of mosquitoes in that area. Mosquitoes, of course, cannot spread malaria unless infected persons are present. In most of the areas under consideration, malaria was greatly reduced, if not eliminated, by the reduction in the number of mosquitoes. In recent years, however, there may have been a great change in the mosquito population without being reflected in cases of malaria. The only way to be sure is to make an actual field survey. The U. S. Public Health Service has sufficient entomologists to aid the local health department in making the primary survey and to give the local personnel sufficient knowledge so that they can carry on the needed follow-up work.

In the case of Asheville and Buncombe County, North Carolina, the problem has come more quickly than in most places. We have a 1,500 bed Army hospital in the Moore General Hospital at Swannanoa. The Navy is represented by a convalescent hospital designed to care for an additional 500 men. A branch of the Army flight control is located in Asheville. Certain personnel of this branch go to and from tropical areas frequently. Additional facilities for convalescent military personnel are in prospect. Thus, while only 42 known cases of malaria have been imported into this county, the probability is that many more will come.

Three additional pertinent facts were known to the local health department. The medical staff at the Moore General Hospital reported that they had found Anopheles mosquitoes in the vicinity, and several years ago 10 cases of ma-

laria were definitely known to have been contracted locally following the importation of one case from Eastern Carolina. Mortality records for Buncombe County are available from 1919 to 1943. While no deaths from malaria have occurred since 1937, there were 13 deaths from this cause between 1919 and 1937. Seven of these occurred between 1933 and 1937. Thus the possibility of the spread of malaria was definitely realized.

An entomologist from the State Board of Health spent several days on two occasions with the Health Department investigating the probable future problem. The survey included the search for adult mosquitoes as well as breeding places. Needless to say, the local personnel had never had occasion to look for Anopheles mosquitoes. It was pointed out that the *Anopheles quadrimaculatus* was the only mosquito in this area likely to spread malaria, and the identification of this mosquito was explained in detail. Likely resting places of adult mosquitoes were inspected in all parts of the county. Numerous culverts, bridges, stables, and pig pens were carefully gone over. As is well known, the Anopheles mosquito seldom flies more than a mile from its breeding place. Consistent with this knowledge was the finding of adult mosquitoes within a mile of certain lakes and nowhere else. It is perhaps significant that the 10 cases known to have been contracted in this county during 1936 all lived within less than a mile of one of these lakes. Repeated visits to this particular lake have never failed to show the presence of *Anopheles quadrimaculatus*.

Numerous dippings were made in still waters along creeks and in various lakes. Many Anophelene larvae were found, some of which turned out to be *Anopheles quadrimaculatus*. Since the differentiation between the larvae of the various species of Anopheles mosquitoes is rather difficult, it was decided to send any later collections of Anophelene larvae to the State Board of Health for final identification.

The climate of the particular community under consideration must be taken into account in making the survey. The mountain waters around Asheville stay sufficiently cold to prevent much mosquito breeding until the latter part of June. Monthly inspections are to be made each year at numerous scattered points throughout the county from the latter part of June until the end of the breeding season, which is usually about the first of October. The night temperatures during September range as low as 36°, thus definitely limiting mosquito breeding. More frequent inspections are being made in areas where Anopheles mosquitoes are known to exist.

Definite action is being taken in the two places where the *Anopheles quadrimaculatus* has been found. As it happens, these two places are in localities frequented daily by military personnel. One place is within 400 yards of the Moore General Hospital, and the other is adjoining the municipal recreation park. A combination of oiling and variation of the water level of the lakes is being used.

This survey has shown the local health department some interesting things. Six major lakes and two pools were known to the Health Department before this survey was made. In going over the county with mosquito breeding in mind, three additional small lakes and four areas where water collects in wet weather were found. A practice which is growing in popularity is the making of small fish ponds to grow edible fish. Several of these were found with considerable vegetation around the edge. As it happens, no mosquitoes were found breeding in these fish ponds, probably because of the fact that the mountain waters feeding them usually

stay at a temperature of about 50° F. These fish ponds are potential menaces, however, and do cause trouble in other sections of North Carolina.

SUMMARY

1. It has been shown that there is an almost certain possibility that troops infected with malaria will return to all sections of the United States. It is very likely that there will be numerous infectious relapses among these men.

2. The need for a resurvey of the potential malaria spreading mosquito population was shown. It was pointed out that large changes in the mosquito population, both as to numbers of mosquitoes and types, are possible in many areas without being reflected in increased cases of malaria.

3. The method of making a survey consists in looking for both adults and larvae of Anopheles mosquitoes. Expert help will be needed in areas where mosquito control has not been necessary in recent years.

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Removal of Poliomyelitis Virus from Sewage by the Activated Sludge Process and the Separation from Sludge of an Antibacterial and Antiviral Substance

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IT was reported in a previous communication that activated sludge as used in sewage disposal processes largely removed poliomyelitis virus from the supernatant liquor. Sludge in amounts of 1,100, 2,200 and 3,300 p.p.m. at 6 and 9 hour aeration periods, removed the virus sufficiently from the supernatant to make it almost completely noninfective when injected intracerebrally into mice.[1] The present report describes the separation from activated sludge of an antibacterial and antiviral substance.

SEPARATION OF AN ANTIBACTERIAL AND ANTIVIRAL SUBSTANCE FROM ACTIVATED SLUDGE

Antagonistic relationships[14] between different types of microörganisms have come recently into prominence. Fleming[15] and others[16] have found an active substance in the filtrate of cultures of Penicillum notatum, which is active against many Gram-positive organisms both *in vitro* and *in vivo*. Dubos[17] isolated an enzyme from soil bacteria which was active against the pneumococcus and other Gram-positive organisms. Later Dubos and coworkers[18] produced a specific antibacterial compound in crystalline form from spore-forming bacteria. It is possible that there may be such antagonistic relationships between organisms in sewage and the agents in activated sludge mixtures. *Eberthella typhosus* and *Salmonella paratyphi* have been observed[19] to exist only a short time in sewage sludge, while a reduction of 99 per cent in the numbers of these organisms was noted to occur in activated sludge after 6 hours' treatment.[20]

As noted above, poliomyelitis virus has been found to be removed or destroyed in sewage by the activated sludge process. The separation from sewage sludge (mixed liquor) of a substance with antibacterial and antiviral activity is herewith described.

PREPARATION OF EXTRACTS

Fresh activated sludge and return sludge were obtained from the local sewage treatment plant. These materials were collected in sterile 4 liter containers and brought immediately to the laboratory.

Numerous preparations derived from dried activated sludge were made through extraction with various solvents, but all proved ineffective when tested for bactericidal and virucidal activity. Wet activated sludge was tried in a similar manner, again with negative results.

In the second phase of the study, fresh activated sludge was incubated at 37° C. for varying periods. In some samples, the effluent or supernatant was transferred to suitable containers and incubated separately. The settled solids (floc) were used to fortify other samples. The sludge was thoroughly mixed for 15 minutes to obtain an even suspension before being transferred to flasks for incubation.

The time necessary for the development of maximal antibiotic effect was found to be approximately 100 hours' incubation at 37° C.

At the end of the incubation period, the effluent was siphoned off into 250 ml. centrifuge bottles and centrifuged at 3,000 r.p.m. for 30 minutes. The supernatant, free from particulate matter, was transferred in 100 ml. amounts to separatory funnels. To each was added 15–20 ml. of ethyl ether and the funnel was then shaken for 3 minutes. After the period of agitation, three layers separated, an ether layer, an aqueous layer, and a jelly-like interphase layer. The ether layer was found to contain an active substance and was designated Extract A. This material, from which the ether has been removed by evaporation at room temperature or at 50° C., was called Extract C.

Extractions were made with chloroform (Extract B) in much the same manner as with ether. Evaporation of chloroform was accomplished at 85–90° C. in a water bath.

Samples of ether extract (C) were taken up in a 2 per cent sodium bicarbonate and then neutralized with acid (5 per cent acetic) to a pH of 7.0 (Extract D).

Each of these 4 types of extracts, ether (A, C, D) and chloroform (B) was tested for antibacterial properties, and the two ether preparations (A, D) were tested for antiviral activity.

METHOD OF TESTING ANTIBACTERIAL ACTION

The concentrated ether extract (A), the chloroform extract (B), ether extract residue (C), and sodium bicarbonate treated residue (D) were tested for antibacterial properties as well as were similarly prepared extracts of two bacterial cultures, *Escherichia coli* and zoögleal.

Twenty-four hour broth cultures of recently isolated strains of *Staphylococcus aureus* hemolyticus and *E. coli* were seeded to nutrient agar plates. Sufficient numbers of organisms (0.3–0.6 ml. of broth culture) were used so that a 24 hour incubation gave growth that masked the plate. The surface of the agar was allowed to dry in air for 15–30 minutes to remove all visible moisture.

The extracts were placed directly on the top of the seeded agar. Several drops (2–3), Extract A, B, were allowed to evaporate before the Petri dish lid was replaced. Extract C taken up with nichrome loop was also placed on the seeded agar surface. The amount taken up was that portion that remained on the edges of the nichrome wire. These plates were incubated at 37° C. for 24 hours and inhibition areas were noted.

The amount of antibacterial substance present was indicated by the degree and extent of inhibition. The presence of an active substance would be indicated by complete inhibition or destruction of the growth of all organisms on the exposed area through the depth of the agar. Fanning out of the inhibition zone from the exposed area could be recorded in terms of cm. of inhibition.

METHOD OF TESTING ANTIVIRAL ACTION

A strain of poliomyelitis virus adapted to mice was used. Inoculations were made intracerebrally in amounts of 0.03 ml. of virus suspension (1:300) unless otherwise stated. Mice were observed at least once daily for paralysis or other evidence of illness. All groups were observed for a period of 30–40 days following the inoculations before the protocol was completed. The original virus suspension was obtained by removing the brains and the cords of mice paralyzed in two or more extremities. These were ground in refined silica and suspended in sterile broth. After centrifugation for 5 minutes at moderate speed, the supernatant (1:5) was removed and used as virus concentrate from which dilutions were made.

In Experiment I, Extract A was mixed with virus to yield a 1:300 virus suspension. This extract-virus mixture was thoroughly shaken and placed in the refrigerator for 2 hours. Ten minutes before the end of the test period, it was again thoroughly mixed. The aqueous layer was then inoculated intracerebrally into mice. Another portion of the virus suspension was treated with ether in a similar manner to serve as a control.

In a second experiment, smaller amounts of Extract A were mixed with the virus suspension and the contact period was increased to 18 hours. The amount of Extract A used was 10–15 per cent of the total virus suspension. After the addition of Extract A to the virus suspension, it was shaken gently for 30–45 minutes, following which it was placed in the refrigerator for 18 hours. The aqueous layer was then removed aseptically for intracerebral inoculation into mice.

Aeration is part of the activated sludge process of sewage treatment, and it was thought that this might be necessary to enhance the activity of an antiviral substance derived from sludge. With this in mind, Experiment III was set up using Extract D. Extract D was mixed 1:1 with the virus in three portions. To the first was added a minute amount of 30 per cent hydrogen peroxide (Superoxol). The second tube was aerated by passing air through the mixture for 4 hours. The third tube contained only the mixture of Extract D and virus suspension. The first and third tubes were placed for 2½ hours in the refrigerator while the aerated tube remained at room temperature. Controls employing virus suspension alone and virus plus an identical amount of 30 per cent hydrogen peroxide were also included. The lack of virucidal effect of aeration had been previously demonstrated.

DESCRIPTION OF THE EXTRACTS

The residue, Extract C, obtained when Extract A was evaporated, was a dark brown oily substance having a distinct, pungent odor. It was soluble in ether and chloroform but not in water. A faint yellow color was present and increased in intensity with concentrations.

Extract B appeared colorless, possibly due to the small concentration obtainable in chloroform. When Extract B was evaporated to dryness, minute amounts of oily residue were observed which had the same characteristic odor as Extract C. The material appeared to be thermostable since the separation of the Extract B was made at a temperature of 85–90° C. for 30 minutes.

A crystalline material has been separated from Extract C on several occasions. The antibacterial but not the antiviral properties of these crystals have been tested.

RESULTS

Antibacterial Tests

The ether extract (A and C) when placed on the surface of heavily seeded

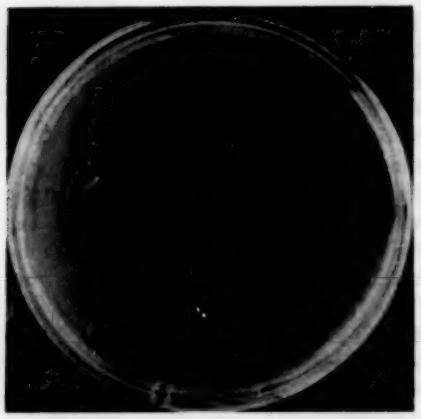

FIGURE 1—Antibacterial Action of Extract A

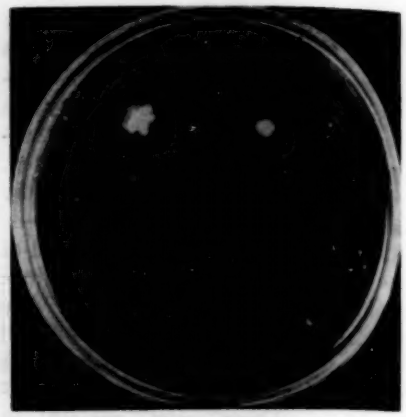

FIGURE 2—Antibacterial Action of Extract C

agar plates, destroyed all the organisms in the areas exposed through a depth of ⅛ in. or more of agar (see Figures 1 and 2).

In Figure 1, the ether extract (A) of the effluent from activated sludge was placed on the surface of the seeded agar. The area of inhibition is apparent. The residue precipitated on the agar within the inhibition area appears as a light grayish material. No growth of organisms was observed below or in the inhibition zone. Figure 2 depicts the action in two areas of the plate of the residue, Extract C, which was placed on the surface by a nichrome loop. The original inoculum was placed directly in the center of the plate and appears in the figure as a light line in the inhibited zone. The loop was again placed on the surface to the left of the original contact and appeared as a slight line in the inhibited zone.

The bactericidal activity of the substance appeared to penetrate into the agar. The zone of penetration was directly proportional to the amount placed on the agar surface.

Extract B gave similar results but the degree of inhibition was not as pronounced as that of Extract A. The inhibition was in the area exposed, with penetration only partially throughout the depth of the medium used (⅛ in.).

The crude substance, Extract C, and the ether extract (A) appeared to be slightly more active against the Gram-positive organism than against the Gram-negative organism though there was definite inhibition of both.

Controls of ether and chloroform were used in all experiments in place of the corresponding extracts with no inhibition of growth taking place.

The antibacterial action of Extract D was not as pronounced as was the effect of Extracts A and C. Surface growth was inhibited but there was only partial penetration into the seeded agar.

Greater amounts of the substance were found in effluents in which extra quantities of activated sludge floc had been incubated than in the effluents incubated without floc. Similarly prepared extracts of *E. coli* and of zoögleal organisms did not appear to contain the antibacterial agent.

Antiviral Tests

Paralysis in one or more animals in any test group was deemed to be indicative that the virus had not been destroyed by the extracts. Animals

dying 1 to 3 days after inoculation were considered to have died from trauma or interfering toxic substances.

The results of all the tests for antiviral action on poliomyelitis virus are shown in Table 1.

TABLE 1

Antiviral Activity of Sludge Substance

Exp.	Mice Number	Virus Dilution	Form of Substance	Contact Period Hours	Results P	D	Dis	Miscellaneous
I	20	1–300	Extract A	2	1	5 *	14	1:1—Virus+Extract A
	20	1–300		2	10	3	7	Control—Ether Treated
II	21	1–250	Extract A	18	3	6 *	12	Ext. A used 15% of Virus Suspension
	20	1–250		18	8	4	8	Control—Ether Treated
	16	1–250		18	9	2	5	Control—Nontreated
	14	1–5		18	8	6	0	Control—Nontreated
III	30	1–300	Extract D	2½	10	4	16	1:1—Virus+Extract D
	30	1–300	Extract D	2½	0	2	28	Virus+Substance+Hyd. Peroxide
	30	1–300	Extract D	4	1	1	28	Aerated Mixture
	30	1–300		2½	10	3	17	Control—Virus+Hyd. Peroxide
	30	1–300		2½	13	3	17	Control—Nontreated

P = Paralyzed
D = Died without Paralysis
Dis = Discards
* See Explanation in Text.

In Experiment I (Table 1), of 20 animals receiving virus suspension that had been in contact with Extract A for a 2 hour period, 1 animal was observed with paralysis, 5 died without paralysis being observed, and 14 remained alive. Four of the deaths occurred within 3 days after inoculation and were thought to be due to trauma or toxicity as the one animal developing paralysis did so only after 18 days' incubation. In the control group, of 20 animals receiving an ether treated virus suspension, 10 were observed with paralysis, 3 died without paralysis being noted.

In Experiment II, the length of contact between Extract A and the virus suspension was increased to 18 hours and the amount of extract was reduced to 15 per cent of the volume of the virus suspension.

Of 21 animals receiving the treated virus suspension, 3 were observed with paralysis, and 6 died without paralysis being observed. Three deaths occurred within 2–4 days after inoculation. In the control groups receiving virus treated with corresponding amounts of ether, of 20 animals, 8 were observed with paralysis while of the control animals receiving virus alone (1:250), 9 were observed with paralysis. Of the controls receiving the 1:5 virus suspension, all became paralyzed or died. The extract as used in this experiment seemed of little effect.

Extract D was prepared in order to try to increase the solubility of the material and hence to insure more thorough contact with the virus. Constant shaking and agitation was not employed when Extract D was used. The results of the action of Extract D against the virus are shown in Experiment III, Table 1.

Of 30 animals receiving Extract D-virus mixture, 10 were observed with paralysis, and 4 died without paralysis being observed. When hydrogen peroxide was added as a source of oxygen with Extract D-virus mixture, no animals, of a group of 30, were observed with paralysis and 2 died

without paralysis. Of the 30 mice used in the control group in which the virus was exposed to the same amount of hydrogen peroxide, 10 animals were observed with paralysis, and 3 died without paralysis. In the aerated Extract D-virus mixture, 1 animal of 30 was observed with paralysis, and 1 animal died without paralysis being observed. Aerated virus suspensions were not included as controls in this experiment, as aeration for long periods had previously been shown not to affect the virus. The untreated control (1:300 virus suspension) caused paralysis in 13 mice, with 3 mice dying without paralysis.

While it seemed that some antiviral effect was exerted by the ether extracts, much clearer results were observed when the ether extract residue treated with sodium bicarbonate was used in the presence of oxygen or aeration.

SUMMARY

The activated sludge process of sewage treatment in aeration periods of 6–9 hours has been found to remove or to destroy poliomyelitis virus. Efforts to separate from the sludge (mixed liquor) an active principle have yielded a substance which exhibits antibacterial and antiviral action. The yield of the substance is increased by incubation of sludge.

The substance is soluble in ether and chloroform and is relatively insoluble in water. It appears to withstand a temperature range of 4°–85° C. without denaturization.

The material was found to have antibacterial properties when placed in direct contact, on a seeded agar plate, with organisms both Gram-negative and Gram-positive. Activity was diminished when the crude substance was treated with sodium bicarbonate and subsequently neutralized to pH 7.0.

The material in the form of an ether extract appeared partially to inactivate a mouse-adapted poliomyelitis virus. The ether extract residue treated for brief periods with sodium bicarbonate and subsequently neutralized seemed almost inert, but the activity of this fraction was enhanced by the presence of oxygen or by aeration.

The source of the material has not been determined but it is apparently not produced by *E. coli* or zoögleal organisms.

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The Public Health Significance of the U. S. Cadet Nurse Corps

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THE country's nursing shortage must be attacked as a production problem. As essential to the war as are planes, guns, and ships, the nurse is a guardian of the national health and the welfare of our fighting men.

Passed unanimously by the Congress in June of this year, the Bolton Act is keyed in its administration to the production of more nurses in a record period of time. The production goal for 1943 has been set as 65,000 new student nurses.

To provide the same amount of nursing care per patient in 1944 as in 1941, 115,000 new students would have to be admitted to schools of nursing this year. The compromise number, 65,000, was necessitated by the realities of the situation. This figure is a minimum which must be met unless the machinery of the nursing services is to break down. By whatever number the goal is surpassed, hospitals and public health services will benefit in direct proportion. If the goal is not met, every hospital and public health service will feel the pinch more this year and even more next year.

Public health services are vitally concerned with the adequacy of nursing care in hospitals. The public health of the nation depends upon proper medical and nursing care. This care is a basic consideration in maintenance of the public health.

Most of the 1,300 nursing schools, or production plants, in the country are operated by hospitals. A complete business cycle is represented in this system of operation. The hospital is the owner and operator of the plant and among the chief consumers of the product, which is the graduate nurse, and of the by-product, the student nurses' services. Hospitals without nursing schools are dependent on the 1,300 manufacturing plants. The success of the 1,300 schools in meeting the 65,000 goal will have a very direct bearing on the continuing existence of some of the 6,500 hospitals and of the continuing services of many.

During wartime, the federal government becomes a large consumer of nurses and leaves the hospitals with a shortage. Also, the government is concerned with the public health on the home front in its application to industrial production and its effect on the morale of the armed forces. As a consumer, necessarily concerned with the output, the government, through Congressional action, has stepped in as a financial investor in the nurse production plants.

In giving financial assistance in the production of nurses, the government has found it wise to use existing schools operating their own policies. The schools are responsible, under the Bolton Act, for admitting more students

and preparing them in shorter time. Production in the U. S. Cadet Nurse Corps of the same quality of nurses as before should evolve from this acceleration. Educational standards will be maintained.

Under the accelerated training programs required for the Corps by the Bolton Act, all essential instruction and experience must be condensed into 24 to 30 months. An extra 6 to 12 months of supervised practice is provided if required for registration by the state or for graduation by the school. This additional time is known as the Senior Cadet period.

The Senior Cadet may be transferred to a civilian hospital, federal hospital, public health agency, or may remain in the "home" hospital to replace a graduate nurse.

Public health and visiting nurse services will benefit directly by procuring Senior Cadet nurses, who have received full classroom and clinical experience and are available for full-time practice under supervision. It should be understood that the type and kind of supervised experience must be acceptable to the home school and the State Board of Nurse Examiners. Public health agencies, desirous of procuring the services of Senior Cadet nurses, should deal directly with the nursing schools in their areas.

On reaching the senior period, Cadets leave the ranks of students and make way for new students. Production will be increased through accelerated programs only if the Senior Cadet is removed from the school's housing and educational facilities. Retention of the Senior Cadet in the school would be comparable to the clogging of an assembly line with completed planes for six months.

Thus, shortening of the time element is the first step toward achievement of wartime production. Raw material to feed the processing machine must be amassed next to make the speed-up economically sound. The U. S. Cadet Nurse Corps recruitment program is progressing very satisfactorily. By the end of September, almost 800 schools of nursing had been accepted into the Corps program. Approximately 80,000 students in these schools were expected to join the Corps, with about 41,000 of that number new students. More applications are being approved every day.

Recruitment has been supported by national, state, and local nursing councils, schools, hospitals, and others interested in the nursing profession. Information centers have been established in all hospitals to provide candidates with material on the Corps and on schools of nursing.

Acceleration and recruitment by themselves will not accomplish the production goal. They must be accompanied by expansion of educational facilities. As a beginning, existing facilities must be used to their greatest capacity, a capacity which is greater than many schools have yet recognized. Then, many schools have one bottleneck service which hinders maximum output. These must be removed by affiliation. Schools participating in the Corps must provide clinical experience in surgery, pediatrics, obstetrics, and medicine. Additions of a psychiatric affiliation by every school in the country would produce a 10 per cent increase in student enrollment in the year, if at the same time, the nurses' residences were kept filled. By negotiating new affiliations, the school improves and increases nursing services for its own patients and provides nursing service in the affiliating institution. Obviously, nursing care in psychiatric institutions would be greatly improved and the graduate nurse would be better prepared for the future. Other affiliations such as public health nursing and

communicable diseases offer parallel advantages.

Insufficient housing facilities must not be permitted to curtail student enrollment. Just as the factories of the country have met wartime demands, so the schools of nursing must avail themselves of every facility. They must expand their physical boundaries if necessary. Financial assistance for new construction or for alterations on a leased or purchased building may be secured quickly from the Federal Works Agency through the Lanham Act.

Schools are faced with still another impediment to expansion in the shortage of instructional personnel. The shop foreman is indispensable in the factory. The nurse educator must be considered in the same light. She should not be hindered by administrative or clerical work. Her efforts should be rewarded by ample salaries and recognition. Non-nurse instructors should be used as much as possible. Schools might pool personnel. Married nurses could work on a part-time teaching basis. Senior Cadets may act as assistants to nursing arts and clinical instructors.

All-expense scholarships in nurse education courses at colleges and universities have been made available through Bolton Act funds. Nursing schools have been urged by the Division of Nurse Education, U. S. Public Health Service, administrator of the Corps program, to choose graduates to study for advanced positions and return to the "home" school to teach.

It is apparent, therefore, that all of these bottlenecks on the production front can be solved. The goal can be reached.

Great progress has been made in the program since the appropriation became available on July 16. Rules under which the Bolton Act is administered were formulated by an Advisory Committee, meeting with Dr. Thomas Parran, Surgeon General, U. S. Public Health Service. Represented on this committee were hospitals, nursing schools, universities; medical, administrative, and nursing professions.

The program has been publicized widely in all media of expression. Great credit is due the State Boards of Nurse Examiners for their work in liberalizing admission requirements, aiding in acceleration programs, recruiting students, and in placement of Senior Cadets. Coöperation in these problems has also been given by state and local nursing councils.

Success at the outset of the program has been realized. Now we must look to the future. There is more work to be done before the nurse shortage problem is solved. Continued coöperation by all professional groups is necessary to the success of the program. We cannot afford to fail.

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A PROPOSED VITAL RECORDS ACT (S. 1096)

THIS bill, introduced in May, 1943, brings to focus a long and detailed discussion of vital records and statistics. In effect, it provides for transfer of the functions of the Division of Vital Statistics, Bureau of the Census, to the U. S. Public Health Service, and for expansion of these functions. The objectives of the bill are stated as being " for the purpose of coördinating the vital records and vital statistics offices of the State into a coöperative vital records system, including improvement of the registration procedures of such States for the purpose of guaranteeing complete and accurate registration, preservation, and availability of certificates and related records of births, deaths, marriages, divorces, legal separations, annulments, changes of name, adoptions, and legitimations within the United States." It would create, in the Public Health Service, a " Bureau of Vital Records which shall be under the immediate supervision of an Assistant Surgeon General." Very wisely the bill specifically provides that " Nothing contained in this Act shall be construed to modify or supersede in any way the powers, duties, and responsibilities of the various States for the registration of vital statistics."

A full discussion of the background of this proposed legislation can be found in a Message from the President, published as *House Document 242, 78th Congress, 1st Session*. This document, incidentally, is an excellent text on vital records and among other things contains the Report of the Commission on Vital Records, Office of Defense Health and Welfare Services, and the Report of the Vital Records Committee of the Association of State and Territorial Health Officers. Here appears, too, a Report of the Bureau of the Budget Relating to Vital Records and Vital Statistics. All these emphasize the desirability of focusing federal activities in vital records and statistics into a single agency, the need for strengthening and coördinating federal, state, and local activities in this field, and the necessity of enlarging their scope.

The bill in question is designed to do these things, and there appears not to be that type of opposition which was encountered when the Committee on Public

Health Organization, White House Conference on Child Care and Protection, called by President Hoover, recommended in its majority report that certain health activities, scattered in the federal government, be transferred to the Public Health Service. Some of those recommendations created such violent emotion and opposition that Mr. Hoover is to be pardoned for indicating that he was sorry he ever raised the question. Since then the Public Health Service has itself been lifted out of its ancient but anomalous position in the Treasury Department and is now a part of the Federal Security Agency. There it continues its excellent work but we suspect that at times its more grizzled veterans must wonder about some of the strange fellows with whom they are now bedded down.

Even though there is general concurrence that the objectives of S. 1096 are sound, there are certain elements of the bill that need careful scrutiny and, we feel, revision. For example, while the functions of the Division of Vital Statistics of the Bureau of the Census would be transferred to the Public Health Service, the direction of the new Bureau of Vital Records in that Service would be under an Assistant Surgeon General rather than the Surgeon General, thus: "The Assistant Surgeon General [not the Surgeon General] is authorized," "the Assistant Surgeon General shall compile," "the Assistant Surgeon General shall provide . . ." Occasionally, there is reference to "approval of the Surgeon General" but this relates essentially to fiscal procedures. Such tricky tongue-in-the-cheek legislative expressions will tend to defeat what the bill states is its purpose, for organization is jeopardized and administrative confusion assured whenever a subordinate has authority and responsibility neither delegated to him by his chief nor possessed by that chief. If the Public Health Service is to be responsible for federal activities in vital records and statistics, then it is not only desirable but essential that full authority for this activity be vested in the Surgeon General and not in a subordinate. The present bill's ambiguity in expressing this intent constitutes what, in less refined circles, might be designated as double-talk.

Another questionable feature is that the bill would create a "Bureau of Vital Records" in the Public Health Service. It is to be remembered that the principal administrative units of the Public Health Service are *Divisions*. It is difficult to appreciate the necessity for making this new activity a *Bureau*, which administratively is of higher caliber than a Division. Other important services function satisfactorily and on a par with each other as Divisions, and while the Public Health Service might in future profit by reorganization of its structure, there seems no good reason why this new activity should administratively dwarf others to the detriment of the whole. Granted that Vital Records and Statistics are important, so are the Divisions of Scientific Research and States Relations, and Venereal Disease Control.

One must commend this attempt to improve federal activities in vital records and statistics, and must approve an effort to place these functions, administratively, under the principal health agency of that government. One cannot, however, look with equanimity on legislation which by its very language promises deformity of organization and difficulties in administration. If autonomy and isolation of vital records activities are the prime considerations, then keep such activities in the Bureau of the Census; if they are to be placed in the Public Health Service, put them there and have done with it.

Senate Bill 1096 is badly in need of revision.

POLIOMYELITIS REMAINS AN ENIGMA

SOME five years ago Lumsden, who is a hard-bitten epidemiologist of the realistic school, active in field work and incisive in his thinking, presented a paper entitled *Poliomyelitis: Facts and Fallacies.* He opened his paper with this significant quotation: "*'What is truth?' asked Pontius Pilate, and did not tarry for an answer.*" He closed it convinced that not only was the then existing knowledge of poliomyelitis insufficient to permit a statement as to mode of transmission but so meager as to demand continuing exhaustive and intensive research. More recently the same author reviews poliomyelitis in *Texas Reports on Biology and Medicine* and again cautions against authoritarian opinions and deprecates premature conclusions. The articles in question are well worth study and the subject demands serious thought.

Since Lumsden's frank avowal of the limitations of knowledge as to poliomyelitis, no inconsiderable amount of research has been carried on, particularly in relation to the means of transmission of the disease. Reports of the presence of the virus in stools, in sewage, in flies, in a mouse, have stimulated further investigations and speculations; and more and more there is questioning of the correctness of statements as to *Source of Infection* and *Mode of Transmission* of poliomyelitis as set forth in the American Public Health Association's *Control of Communicable Diseases.* Officially, as it were, the source of infection is essentially the nose and throat discharges of infected persons and carriers, "or articles recently soiled therewith"; and as to mode of transmission, it is laid down that "the virus enters the brain by way of the olfactory nerves and bulb when introduced into the nose or nasopharynx of a susceptible person, presumably from a carrier in most instances."

Thus today, with a poliomyelitis season just ending (we hope), the epidemiologist is not much further along than he was two decades ago. Actually, but scant new epidemiological knowledge has been forthcoming. The presence of virus in flies is not truly new, for Rosenau and Brues, and Frost and Anderson more than twenty years ago reported the development of what they believed to be poliomyelitis in monkeys bitten by stable flies. As regards the presence of poliomyelitis virus in human excreta, Kling, *et al.*, in 1912, and Wilbur A. Sawyer, in 1915, reported this. Jungeblut's paper which appeared in the February, 1943, issue of the JOURNAL reported recovery of poliomyelitis virus from a mouse found dead in a home where there had just been a fatal case of poliomyelitis. This is a new note in the search for knowledge but its epidemiological significance cannot be completely interpreted at this time.

Viewed historically, one sees in the present epidemiological gropings in poliomyelitis many characters and gestures similar to those that have occurred in the past, particularly in relation to the yellow fever situation toward the end of the last century. One sees a general tendency to hang on to the respectable-with-age concept of person-to-person transmission, and also there are some non-contagionists. There are found, too, the typical authoritarians who tend to lay down the law with one hand and excommunicate non-believers with the other, and there are the rebels who invite this wrath. One finds in addition the full gamut of old arguments with insistent emphasis on one special feature or another: On constitution and diatheses, on lines of population movement, on the significance of geographic distribution, and the implications of season, temperature, humidity; upon the meaning of attack rates by age, by sex, by race, and rural and urban;

on water, milk, human excreta, beasts and birds and insects. Is there somewhere a Carlos Finlay waiting for a Walter Reed, or a pump-handle waiting for a modern John Snow?

All in all, the situation strongly suggests a leanness of interpretable facts and a fatness of hard-headed opinions. In such circumstances only the open-minded may claim epidemiologic respectability and they, unlike Pontius Pilate, must tarry for an answer: unashamed to admit ignorance, unawed by authoritarian edicts, persistent and diligent in the search for truth.

BOOKS AND REPORTS

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted.

A Manual of Pulmonary Tuberculosis and an Atlas of Thoracic Roentgenology—*By David O. N. Lindberg, M.D., F.A.C.P. Baltimore: Thomas,* 1943. 219 pp. 189 ill. 145 plates. Price, $6.50.

In this small volume the author has faithfully followed his avowed purpose of presenting " the subject of pulmonary tuberculosis with brevity and sequence, maintaining a closeness to experience in diagnosis, treatment and prevention." The introduction concisely depicts the historical background and enumerates the scientific discoveries and the fundamental methods which favor accurate diagnosis, successful management, and ultimate control.

Part one is devoted to a brief discussion of the essential factors having to do with diagnosis, treatment, and control. This section of the book contains 67 pages and is divided into 5 chapters. These chapters are accompanied by 44 illustrations, including valuable charts and tables. It is surprising how much of the available knowledge concerning the diagnosis and treatment of pulmonary tuberculosis has been crowded into the short space devoted to these subjects, yet the well informed reader may occasionally discover a certain degree of inadequacy because of the enforced brevity. This is particularly true of the chapter on diagnosis.

Roentgenologic technic and interpretation are well presented and in language which may be understood by the reader who is not expert in this field. The chapters on treatment are excellent. They deal briefly but comprehensively with the time tried principles of management, plus the varied methods of collapse therapy. Finally, the brief chapter on control is logical, sound, and impressive.

Part two contains an Atlas made up of 145 reproductions of well chosen roentgenograms showing pulmonary tuberculosis in its various forms and many non-tuberculous pulmonary conditions. Each illustration is accompanied by a descriptive legend which is distinctly informative and authoritative, thus affording effective data for differential diagnosis. This Atlas alone constitutes a valuable contribution to our knowledge of pulmonary pathology.

The condensed information contained in this small manual should be made available to every medical student and every practising physician.

LEWIS J. MOORMAN

The Kenny Concept of Infantile Paralysis and Its Treatment—*By John A. Pohl, M.D., in collaboration with Sister Elizabeth Kenny. With a foreword by Frank R. Ober, M.D. Minneapolis: Bruce Publishing Co.,* 1943. 368 pp. 114 ill. Price, $5.00.

This book offers for the first time a comprehensive description of the conception and physical treatment of infantile paralysis as evolved by Sister Kenny and her American coworkers.

The main theme of the volume is presented in three parts: the acute stage, the convalescent stage, and the chronic stage. The first chapter in Part I deals with the symptoms of the acute stage under the Kenny concept: muscle spasm, mental alienation (more understandably described as nerve-muscle dissociation); incoördination of muscle action, and muscle weakness and paralysis. The other chapters in this

part include: clinical condition, nursing care, treatment of muscle spasm (preparation and application of hot foments), the respiratory system, and muscle stimulation.

The chapters in Part II are: the neuromuscular system (introduction to reëducation), muscle function, classification, type, action and synchronization of muscles, principles of treatment, practical considerations in the restoration of function in all parts of the body, balneotherapy, and the treated patient.

The very brief Part III deals with the rôle of orthopedic surgery and artificial supports in the chronic stage. A commentary by Dr. Miland E. Knapp, Professor of Physical Therapy at the University of Minnesota, concludes the volume. Everybody agrees that Miss Kenny deserves great credit for her original ideas in the conception and treatment of the acute stage of infantile paralysis. These ideas only evolved gradually, as shown by the fact that in her first book, published in Australia in 1937, nothing is said about muscle spasm or hot fomentations. The chief progress in this volume over those previously published is the absence of the large amount of controversy and argumentation which marred Miss Kenny's earlier writings, also the evident endeavor to present controversial issues and points of technic with clarity. Many illustrations add to the practical value of this timely volume which will be studied with equal advantage by physicians and physical therapy technicians, as by all those interested in the care of the victims of infantile paralysis.

RICHARD KOVÁCS

Review of Ethics for Nurses—*By Charlotte A. Aikens. (5th ed.) Philadelphia: Saunders,* 1943. 378 pp. Price, $2.50.

This readable 5th edition has as its chief purpose the aiding of "teachers and students in the study of conduct and duty" as they relate "to nursing and nursing life." The text is designed primarily for the entering student. It aims to stress the importance of careful study of ethical principles and of the "drilling and disciplining of the woman inside the nurse." It emphasizes character as the *sine qua non* of a nurse. It presents in detail myriad carefully selected problems—situations which have troubled students. Frequently the author indicates solutions to these problems. Frequently, also, unanswered questions are designed to stimulate the student's consideration of all sides of problems.

The book consists of three units: (1) Orientation, Some Guiding Principles, which should help to orient the entering student to nursing, (2) Problems of Personal and Professional Conduct, with which the student may have to cope, and (3) Professional Obligations and Adjustments, which may face the graduate nurse.

In addition, questions for discussion or review follow each chapter. Several new chapters have been added, including the opening one on the basic principles of ethics. Many chapters have been expanded or rewritten, while new emphasis has been given the entire book. Suggestions to instructors on methods of teaching and the general handling of the course have been added in an appendix.

Questions which might be raised are:

1. Does the detailed presentation of the many problems help the student most effectively to develop a desirable "pattern for living" or should more emphasis be placed upon the development by the student of a philosophy within which her thought and conduct may be based primarily upon principles?

2. Should material be included which is studied in detail in other courses, as, for example, that in the chapter on "The Evolution of Nursing"?

3. Are the entering students able to ap-

preciate unit 3 which deals with graduate nurse obligations?

4. Would more specific sources of references add to the book's value?

5. Would "school of nursing" be preferred to "training school"?

One cannot read this text without deep appreciation of the author's fine sincerity and broad experience.

KATHARINE J. DENSFORD

Food for People—*By Margaret G. Reid. New York: Wiley,* 1943. 653 pp. Price, $4.00.

Food for People opens with a consideration of food in the national economy and provides a clear picture of the present food situation in this country. It discusses food production, processing and preparation, with special reference to changes in methods and their bearing on nutrition and social control. In addition, food consumption, its status and factors affecting it, such as food preferences, food habits, nutrition education, food prices and advertising, are discussed at length.

Here is a well documented, concise, though broad in scope, contribution. It combines the subjects of economics and nutrition so that the movement of foods from production to consumption is discussed in relation to nutritional standards.

The author attempts to measure food consumption in terms of social welfare rather than in statistical trends and dollars and cents value.

However, there are those who will not agree with the sections relating to legislative and social policies. For instance, those who are cognizant of the practical problems underlying subsidies will not share Miss Reid's enthusiasm for this method of solving production and consumption problems. There are many of the measures which she presents that are still new enough and disputed enough to have statements partisan to both sides. There are some measures that have already been shown to be impractical. Even though the author has presented an interesting treatment of these matters, she interprets many of them in the light of personal beliefs and prejudices.

This is an example of how quickly a book can become out-of-date. Many government offices mentioned, such as the Office of Defense Health and Welfare Services, Civilian Conservation Corps, Works Progress Administration, and Surplus Marketing Administration, are no longer in existence. To ration or not to ration is no longer a question but an actuality.

All told, this book is an authoritative contribution to a growing body of literature on food trends as related to national nutritional adequacy.

MARIETTA EICHELBERGER

Kaiser Wakes the Doctors—*By Paul de Kruif, Ph.D. New York: Harcourt, Brace,* 1943. 158 pp. Price, $2.00.

Kaiser wakes the doctors in the best de Kruifian manner. The author is the alarm clock. Some will find his tone raucous, others a clarion call, for in this volume de Kruif employs that flair for writing and those journalistic technics by which in the past he has simultaneously aroused public interest and lifted scientific eyebrows.

Essentially, this volume tells the story of Mr. Kaiser's determination to provide good medical care for his employees. The fact that such care produces more efficient workmen is only incidental in this great builder's vision. He has a deep and abiding conviction that ordinary human beings should not be excluded from the best medical care merely because they have not sufficient funds to pay what such care costs under the present system of medical practice. Dr. Garfield is his medical director and he, on the basis of previous experiences, builds up a voluntary prepaid insurance

scheme whereby Mr. Kaiser's employees are provided a high grade medical service on the group practice basis. The fifty cents a week from each workman plus fees from compensation cases provide income sufficient, in an amazingly short time, to pay for laboratory work, x-rays, specialists, medical care, equipment, clinics, hospitals, and everything else.

The book is easy to read; and one is so strongly caught in the surging tide of great accomplishments that, for the time being at least, he tends to cheer Mr. Kaiser and his medical director and their shining goal just as he would cheer for Galahad and the Holy Grail, or for Horatio Alger, Jr. The author creates this state of mind in his readers by dramatizing ordinarily humdrum situations, by creating hero rôles for his characters, and, to no small extent, by his own Gargantuan enthusiasm. In the course of his narrative de Kruif attempts both to show and show up what he considers to be the invisible and deterring hand of a medical hierarchy, balances democratic though fumbling freedom to choose one's physician against impersonal but effective medical teamwork and finds the former wanting, indicates disapproval of government managed medical care and hopes for an extension of the Kaiser medical service system throughout industry, into rural areas, and for the country as a whole. There is a final recommendation that there be created a government Medical Loan Agency which would guarantee to "local bankers 50 per cent of any losses which might come as a result of the banks' willingness to finance these new Mayo Clinics for the common man."

Those engaged in public health work ought to read this story. Although in hyperbole, it recounts a fine undertaking from which much that is sound may be learned. Probably the book will be received enthusiastically and uncritically by the reading public; certainly it will be gagged on as a bitter dose by those who believe that satisfactory medical care must be divided into as many administrative units as there are physicians practising.

H. S. MUSTARD

Whooping Cough—*By Joseph H. Lapin. Springfield, Ill.: Thomas,* 1943. 273 pp. Price, $4.50.

The growing number of reports on whooping cough contain so many conflicting views and observations that a thorough survey and appraisal of the literature by one experienced in this field is needed. Dr. Lapin essays this formidable task in a book covering clinical, laboratory, public health and experimental aspects of this disease. The bibliography is desirably comprehensive but in the opinion of the reviewer the author has erred in attempting to mention in some detail in the text nearly all of the articles he has read.

An impression of insufficient exercise of critical appraisal is conveyed by devotion of space to publications amounting only to expression of unsupported opinion or inadequately controlled observations. In commenting on Table 21, age selection is noted as a factor depreciating the apparent superiority of convalescent to hyperimmune serum, but lack of statistical significance is overlooked. The physician or health officer will not find the difficult task of selecting a potent vaccine made easier by the author's broad conclusion that the efficacy of pertussis vaccines, washed or unwashed, with or without the toxic factor, is now proved quite adequately.

Dr. Lapin recommends exclusion of contacts from school for at least two weeks from last exposure, unless examined daily by a physician and cough plates taken. In support of this recommendation he argues that due to fail-

ure to exclude contacts from school, New York City has the highest case fatality rate among 13 cities over 500,000 population, although the source article makes it clear that the high rate is due to poor case reporting and New York's mortality rate ranks fourth lowest. Quarantine of cases, with placard, for 4 weeks, except where the physician may choose to allow the patient abroad with an armband, seems neither practicable nor justifiable.

This book should serve best as a convenient means of locating literature on the subject of whooping cough.

P. A. LEMBCKE

Health of Our Nation Series—*By Brownell and Williams. New York: American Book Company,* 1943.

1. Well and Happy. 156 pp. $.76.
2. Clean and Strong. 180 pp. $.80.
3. Fit and Ready. 243 pp. $.84.
4. Safe and Sound. 279 pp. $.88.
5. Hale and Hearty. 303 pp. $.92.
6. Active and Alert. 311 pp. $.96.
7. Living and Doing. 346 pp. $1.00.
8. Adventures in Growing Up—Brownell, Williams, Conrad, Evans, Kaplan, Pinckney and Ruef. 488 pp. $1.60.
9. Health Problems—How to Solve Them — Brownell, Williams and Hughes. 317 pp. $1.52.
10. Being Alive—Human Structure and Functions — Brownell, Williams, Hughes. 430 pp. $1.60.

Youth Faces Maturity. 30 pp. $.20.

The Health of Our Nation Series consists of 10 volumes—7 for use as textbooks in 7 grades of elementary school, and 3 on a more advanced level.

The subject matter of these books presents comprehensively all phases of the health, growth, and personality of the child. A survey of the tables of contents reveals chapters on cleanliness, nutrition, safety, medical services, physical training, prevention of diseases, and personality development. It is evident that the authors assume a knowledge of health, preventive medicine, and physiology among teachers that is rare.

The books show evidence of thorough planning. They are well graded in difficulty. The early books are planned to serve as readers. Beginning with the 4th book, a transition toward the textbook rather than the story book approach is evident. Each book expands the subjects of previous volumes and then includes one or two new topics. The authors effectively apply their own concept—that is, that growth includes a gradual expansion of control over self and environment. The volume *Being Alive* does not fit into the pattern with the other books. It is a textbook of anatomy and physiology and must be considered separately. In our opinion, the presentation of such technical subject matter requires further elaboration for the average high school student.

The series shows little recognition of organized public health as a means of protecting the community against disease. The milk inspector works for some mysterious unnamed agency. The health officer is a man who comes out of nowhere to tack up a quarantine placard. The public health physician is not mentioned.

An undue emphasis on physical training as a means of obtaining good health permeates the entire series. Fresh air, exercise, games, competitive sports, and good posture are offered as panaceas. There are several medical inaccuracies, and the books present concepts no longer generally accepted by the medical profession. For instance, the procedure of active and passive immunization against scarlet fever, as suggested by the books, is no longer considered good medical practice.

Despite these rather trivial objec-

tions, the *Health of Our Nation Series* is a splendid contribution to the teaching of health. The authors effectively motivate healthful living, giving the child concrete aims and objectives.

ELEANOR SACHS and
BENJAMIN SACHS

Memoir of Walter Reed—*By Albert E. Truby, Brig. Gen. U. S. Army Ret. New York: Hoeber,* 1943. 239 pp. Price, $3.50.

It is indeed fortunate that this work has appeared before the firsthand information it contains has become unavailable. Few are still living who know intimately the details of this phase of the life of Walter Reed, and none knew this time and work better than Truby. He has been assisted by several others who were also present at the time. The result is a most interesting and valuable picture of the events that led up to one of the greatest medical discoveries of all time, i.e., the method of the spread of yellow fever, and the almost complete control of the disease that has resulted from this discovery.

As this reviewer sees it, Truby has cleared up a number of interesting details that heretofore were not clear. Many points were lacking in the account about which many of us have wondered. And although both Reed and Carroll were the reviewer's teachers at the Army Medical School some three years before the events mentioned and, though he followed their work at the time, and read everything available since, it took this book to reveal to him what was lacking. It is probable that many others therefore, will likewise appreciate this very interesting account by one who was actually present and intimately concerned with these events.

The book is clearly and interestingly written, gives an excellent picture of the time and place, and is practically free from typographical errors. The type is easy on the eyes and the illustrations and drawings are very satisfactory. It should be available in every library, certainly every medical library. It has definite historic value.

COL. GEORGE A. SKINNER

Edelmann's Textbook of Meat Hygiene—*By J. R. Mohler and A. Eichhorn. (8th ed.) Philadelphia: Lea & Febiger,* 1943. 468 pp. Price, $5.50.

The story of federal meat inspection is that of a national agency taking over a limited portion of the field of meat control, carrying on a technically excellent job but in almost complete isolation from other federal, state, or local agencies in the related public health and food control fields. As a mark of the thoroughness of this isolation, the book before us, largely the work of the two leading officials in the federal meat inspection bureau, makes no single reference whatsoever to the existence of state or local meat inspections, nor gives any recognition to the fact that 35 per cent of the beef cattle, 40 per cent of the calves and hogs, and 20 per cent of sheep and lambs slaughtered for food in this country do not receive federal inspection.

This may also have led to the self confident attitude as shown by the following paragraph in the author's preface to this eighth edition of the book (page 3):

> Through the splendid organization of Federal Meat Inspection in the United States, the incidence of harmful results from consumption of meat and meat food products has been reduced to a minimum and it behooves those in charge of this important hygienic procedure to continue the excellent work which has been recognized as a model for guarding the public health from disease resulting from the ingestion of contaminated meats and meat food products. The limited number of such cases which have been traced to meats and meat food products could invariably be attributed to exposures after

the products have left the custody of the controlled establishments and therefore must be considered the result of careless handling in the subsequent processing, storing, and culinary preparation.

This would seem to ignore too readily the frequent and increasing number of food poisoning outbreaks, largely staphylococcus poisonings, in which meat (cured hams, tongues, etc.) has been involved. Nowhere in the volume have I found mention of any inadequacy in the Federal Meat Inspection Service.

From a public health standpoint, the volume fails to present a full picture of the highly important trichinosis problem. Not one word is given of the extensive studies on trichinosis by Dr. Maurice C. Hall and his coworkers of the U. S. Public Health Service. The most recent data on occurrences of trichinosis given in the book go back to 1913. Again the authors would lead you to assume that, at least as to federally inspected meat, there is no trichinosis hazard, for example, their comments on (page 283): "Instructions have been issued in connection with Federal meat inspection for the purpose of avoiding any possible danger from the ingestion of trichinous meat." This statement fails to make clear that these instructions, which are requirements for treatment (curing, refrigeration, heating) apply only to pork products *classed as commonly eaten raw*—hams, pork butts, sausages, and that pork and pork products not recognized as commonly eaten raw may be trichinous, and known to be such, yet will be stamped as inspected and passed. That little or no reliance can be placed on the warning that thorough cooking of pork must be carried out at the time of preparation, is too well shown by the numbers of trichinosis infections now being encountered.

These few critical observations on this Eighth Edition of *Textbook of Meat Hygiene* by Edelmann, Mohler, and Eichhorn are not in any way to be taken as an indication that an unsatisfactory treatise on the subject has been presented—quite the other way. This book is a finely done and outstanding work and has long been given a most authoritative position in its field. The book contains well written and illustrated chapters on Morphology and Chemistry of Tissues and Organs of Food Animals, on Diseases of Food Producing Animals. It is especially thorough and complete in presenting the history, procedures, practices, regulations of the Federal Meat Inspection Service. Full illustrated descriptions are given of the operations carried on in abattoirs and meat processing plants under the federal control. I can think of no veterinarian or other worker active in meat inspection who would not need to have this volume within his ready reach. SOL PINCUS

Do You Want to Be a Nurse?—*By Dorothy Sutherland. Garden City: Doubleday, Doran,* 1942. 186 pp. Price, $2.00.

For girls in high school and college who wish for more details about nursing as a career than they can read in the free pamphlets available from the Nursing Information Bureau (1790 Broadway, New York, N. Y.), Miss Sutherland's small book *Do You Want to Be a Nurse?* is an informative guide. Unfortunately, nursing in wartime is subject to change overnight and already some of the statements in this book need modification. The author gives in full, however, the names and addresses of agencies where up-to-the-minute vocational guidance can be obtained.

One might gain the impression after reading Miss Sutherland's description of what it takes to make a successful nurse, that only super-women need apply. Such an approach may be discouraging to the average young woman

who cannot realize that she may develop the essential qualities only after three years of experience in caring for the sick. On the whole, however, the profession is presented attractively and fairly and the thumbnail sketches of actual work now being performed by nurses will open wider horizons to prospective nurses than they have probably envisioned in the past.

DOROTHY DEMING

The Conquest of Epidemic Disease—*By Charles-Edward Amory Winslow. Princeton: Princeton University Press,* 1943. 411 pp. Price, $4.50.

This book is more than a compendium of data and references from the Old Testament theory of pestilence as a punishment for sin, through the days of demons, miasms, and germs, down to the streamlined concepts of the virus diseases and the new views concerning aerial dissemination of infection. It is an interesting and highly instructive story, rich with the author's interpretations of the values of each stage of the historical development of knowledge regarding the modes and channels of disease spread.

From a consideration of Hippocratic thought with its visualization of a universe of natural law, but without significant reference to disease communicability, the reader progresses to the primitive concepts of contagion. The recognition of the relation of human plague to diseases of rodents soon suggested an implication of contagion. Galen had recognized that rabies is caused by the bite of a mad dog and Bernard Gordon in the 13th century had contributed his famous list of the eight diseases which were contagious, but it remained for the Black Death, which became pandemic in the middle of the 14th century, to teach beyond any peradventure the communicability of disease.

The chapter on Fracastorius illustrates the instructive way in which the author has discussed the then prevailing views of the causes of disease and proceeds to a critical analysis of a new contribution. The essay on *Contagion* is outlined by chapters with a generous seasoning of comment which makes the book invaluable to the student of public health. In fact, not only the epidemiologist and public health administrator but every practitioner of preventive medicine will enjoy and derive great value from a reading of this book.

It was Fracastorius in the early 16th century who presented the fundamental classification of three different types of contagion—those which infect by direct contact only, those which may also spread by fomes, and those which may infect at a distance. Paying tribute to Sydenham as a great clinician, the English Hippocrates, the author states that "his almost complete neglect of contagion as a practical factor in the spread of epidemic disease and his major stress upon the metaphysical factor of epidemic constitution held back epidemiological progress for two hundred years."

The story of yellow fever in our colonial days is interestingly told by the work of Benjamin Rush and Noah Webster who still adhered to the doctrine that one disease could be transformed into another. "The nineteenth century Filth Theory of Disease was a relatively precise and scientific form of the old doctrine of miasms. It was backed up by statistical and epidemiological evidence; and it actually accomplished results in the practical control of epidemic disease."

The strength of the miasmatic theory was overthrown before the days of Pasteur by the three pioneer epidemiologists, Panum, Budd, and Snow. Their studies on measles, typhoid fever, and cholera are well known to every

student, but Winslow takes the reader in behind the scenes and shows how these healthmen demonstrated the basic facts with regard to the spread of these diseases.

There is a fine chapter on Pasteur, with proportionate credit to Plenciz, Henle, Lister, and Koch for the contributions that these men and their associates made to the newer knowledge. In discussing the importance of the human carrier to disease dissemination, the work of Koch with cholera is recognized; Park and Beebe with diphtheria; Reed, Vaughan, and Shakespeare with typhoid; and later work of other pioneers with meningitis and poliomyelitis. To Theobald Smith goes major credit for solving the puzzling problem of the insect host. The work of Manson with filariasis, Bruce with the tsetse-fly, Ross and Laveran with malaria, Reed and his associates with yellow fever, the English Plague Commission, is not overlooked. Quite appropriately the book closes with a recital of the contributions of Chapin, that dean of American public health administrators, who had the courage to practise the principles established by the research investigator and laboratory worker.

In the words of the author "we are too prone to honor (or dishonor) the great men of the past without ever reading them to see what they really said." Here is our opportunity to know these great men through the laborious readings and studies of a great teacher, an epidemiologist, laboratorian, and health educator, a leader among the healthmen of our age. HENRY F. VAUGHAN

Communicable Diseases for Nurses—*By Bower and Pilant. (5th ed.) New York: Saunders,* 1943. 562 pp. Price, $3.00.

The list of infectious diseases treated in this fifth edition is exhaustive. Practical, specific suggestions are given for the nursing care of each disease and the relation of good nursing to the prevention of complications is consistently stressed. The excellent colored photographs which illustrate the various eruptions and changes in throat conditions are invaluable teaching aids since it is seldom possible for a student nurse to be in the communicable disease department in more than one season.

The description of medical aseptic technic is clear, well illustrated, and contains many practical suggestions, but may leave the reader with the impression that there is only one *right* way to set up an isolation technic. If student nurses are going to be able, as graduates, to direct the care of communicable diseases in homes, on open wards, in clinics or wherever adaptations are needed, their thinking must be directed toward the *principles* upon which such technics are based. The chapter on the care of communicable disease in the home would be more valuable if the emphasis were placed upon the nursing care of the patient and the instructions to be given the mother in that regard rather than upon the fine details of technic. Too often the nurse tries to impose a rigid technic designed for the hospital with its clearly differentiated "clean" and "contaminated" areas, and forgets that the patients' completed restoration to health is the most important thing.

Many supervisors of communicable disease departments will disagree with the suggestion found on page 46 that it is necessary, even desirable, to have a "treatment nurse" pour the medicines and prepare the hypodermics for the nurse in the unit to administer.

This edition introduces a set of questions at the close of each chapter. They are quite elementary, sometimes self-evident, and can be answered by direct quotation from the facts stated in the chapter. They would be much more valuable if they were "problem"

questions, the solution of which depended upon the student's ability to understand and apply the facts presented.

The book provides excellent reference material and is recommended for every communicable disease library.

IDA MACDONALD

Behind the Sulfa Drugs. *A Short History of Chemotherapy—By Iago Galdston, M.D. New York: Appleton-Century,* 1943. 174 pp. Price, $2.00.

This book is more accurately described by the subtitle than by the title, for it summarizes the course of events in the entire field of chemotherapy. It is extraordinarily interesting.

One's attention is caught on the first page by a discussion of the precise meaning of the word "Chemotherapy" and of what distinguishes it from the older "Iatrochemistry." There follow brief but vivid sketches of Paracelsus and Boyle, of the pioneers in the coal industry and William Henry (Mauve) Perkin. Pasteur and Koch are introduced for the part they played in defining the objective. But the main body of the book is devoted to an analysis of the achievements of Paul Ehrlich. The account is necessarily abridged, yet the image it presents of the many facets of this brilliant mind is three dimensional for all its compactness. In the last two and one-half chapters the story of the sulfonamides themselves is dealt with—somewhat sketchily, considering the title.

Two errors call for comment. Poliomyelitis and influenza are spoken of as bacterial diseases and sulfanilamide is twice described as a dye. The latter mistake is annoying to the present reviewer who believes that it was because sulfanilamide is *not* a dye that it lay unrecognized for twenty-five years. But these lapses, while irritating to the specialist, will do the general public no harm, nor do they detract from the interest which the book as a whole will have for the scientist who wants to know how chemotherapy came about.

ELEANOR A. BLISS

Chemical-Technical Dictionary—*By A. W. Mayer. (German-English-French-Russian.) (1st American ed.) Translation under the direction of Prof. B. N. Menshutkin and Prof. M. A. Bloch. Brooklyn: Chemical Publishing Co.,* 1942. 872 pp. Price, $8.00.

The reviewer is at a loss to see the need for the publication here of a four-language dictionary with English instead of American spelling, particularly in view of the existing excellent six-language dictionaries available.

The paper used is very poor for a book intended for continuous and hard use; the printing is even poorer, having obviously been done from old type or plates. There are many broken letters which cannot be read, even with a magnifying glass.

Twenty-five German words, strictly of chemical import were taken at random from two other German-English dictionaries. Of these seven were absent from this alleged new work which shows internal evidence of a hastily-done, old job. Biochemical terms are conspicuously absent. The purchase of this book cannot be recommended.

D. D. BEROLZHEIMER

Health and Physical Fitness—*By I. H. Goldberger and Grace T. Hallock. New York: Ginn,* 1943. 596 pp. Price, $1.92.

Health and Physical Fitness is a lively new, highly interesting book.

To one grown up in health education, it is most refreshing, expressing many of the basic technics advocated by qualified workers in this field.

The book was written for today with wartime emphasis throughout. The following examples will indicate that the subject material is recent: The High School Victory Corps Physical Fitness

Program, food rationing and food requirements, absenteeism in industry, use of blood plasma, nursery school care of children of working mothers, civilian defense and Red Cross activities, chemical warfare, communicable disease control, mental health and war fears, tuberculosis control, a balanced program of work, exercise, recreation, rest and sleep during wartime.

A great wealth of health education material is packed into one small volume, arranged in easy reading style, that should be a delight to the busy reader.

For more serious use the book is especially adapted for classroom teaching of high school pupils and youth groups. It answers many of the health and personal hygiene questions of youth. It is arranged in units of instruction with attractive captions and at the end of each unit there are stimulating questions—methods of testing one's health knowledge, and suggestions for further research.

At this time the book can be especially useful in the High School Victory Corps Physical Fitness Program. The volume provides in sound scientific and interesting fashion much of the health education material one would like to crowd into the last opportunity of instructing boys and girls who are leaving schools and are going into war service or to jobs in essential industries.

The book is illustrated throughout with numerous excellent photographs suited to the subject matter and having just the proper psychological effect. There are also many unique diagrams not seen by the reviewer in any previous books.

CARL A. WILZBACH

Oral Tests in Public Personnel Selection—*A Report Submitted to the Civil Service Assembly—By the Committee on Oral Tests in Public Personnel Selection, Samuel H. Ordway, Jr., Chairman. Chicago: Civil Service Assembly of the United States and Canada,* 1943. 174 pp.

The oral test as a means of arriving at a competitive evaluation of the "personal traits, characteristics, capacities, and behavior patterns that are believed to indicate the probability of success on the job" has probably come to be considered the most indispensable tool of public personnel selection. As such, it cannot be too often or too intensively scrutinized and appraised. The Civil Service Assembly in the most recent of a series of reports dealing with public personnel administration has done a thoroughly conscientious job of underlining the shortcomings inherent in an an unintelligent application of the technic, and has presented an instructive analysis of the steps which must be taken to transform what has often been an arbitrary, inequitable, and inefficient measure into what can be a controlled, legally defensible, and fruitful procedure.

LILLIAN DICK LONG

The Examination of Waters and Water Supplies—*By E. V. Suckling. (5th ed.) Philadelphia: Blakiston,* 1943. 849 pp. Price, $12.00.

This volume is the fifth edition of the best known compendium on water examination. The author has accomplished a difficult job in a manner which does credit to his distinguished predecessors, Dr. Thresh and Dr. Beale. This book is far more than its title indicates. It is a discussion of the chemical and biologic ingredients of waters from many sources, the interpretation and the methods of chemical and biologic analyses and their limitations. The emphasis is on analyses for sanitary purposes.

Methods for chemical analysis correspond closely to those in use in this country. As described they can be used only by a trained chemist. This

is entirely to the credit of the author. Too many American laboratory manuals are written with the hope that the office boy can replace the graduate chemist. The determination of free chlorine is described too briefly in view of the difficulties involved.

Bacteriologic methods differ from those in use in this country mainly because MacConkey lactose broth and agar are still the preferred media in English laboratories. Much valuable data on the differentiation of coliform bacteria are included. The author recommends "Bact. coli" as the best indicator of fecal pollution. For practical tests, the appearance of characteristic colonies on MacConkey agar after gas formation in lactose broth, is regarded as sufficient, but further differential tests are strongly urged. The presence or absence of fecal types of coliform organisms in 100 cc. of water is the criterion of choice, with the usual reservations concerning the significance of the other coliform bacteria.

A considerable section is devoted to the purification of water in all its phases. An interesting section gives detailed mineral analyses of waters from various geologic sources.

There is evident confusion between the laboratory guide *Standard Methods for the Examination of Water and Sewage*, published by the A.P.H.A. and the A.W.W.A., and the U. S. Public Health Service standards of purity for common carriers but such confusion exists also in this country.

JOHN F. NORTON

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

Boom in Baby Business—Just what the anticipated 1943 birth rate of 24 per 1,000 will mean in terms of limited medical and nursing services is dramatized in a graph showing the cumulation of gains in births during the last decade.

ANON. A Dividend of Two Million Babies in Ten Years. Stat. Bull. (Met. Life Ins. Co.). 24, 8:4 (Aug.), 1943.

108,000 M.D.'s : 120.8 Millions :: 1:1,118.5—From the O.W.I. comes this comprehensive report on health and doctor shortage, the data originating in the Public Health Service, War Manpower Commission, and the Federal Works Agency.

ANON. Doctor Shortage and Civilian Health in Wartime. J.A.M.A. 123, 4:214 (Sept. 25), 1943.

Health Barometer of Germany's Large Cities B. B. (Before Bombing)—Infant death rate increased to 66 in 1942, and deaths of children under 5 rose sharply, but adolescents' rates rose more sharply than any other group. Tuberculosis death rates in 1942 were 24 per cent higher than in 1939. Suicides, too, have increased during the war years. Birth rate—12.7—is down from 17.3 in 1940.

ANON. The Death Rate in Germany. Science. 98, 2536:126 (Aug. 6), 1943.

Babies' Sore Eyes Are Cured—Items on medical treatment are not supposed to be included in these annotations, but this one seems to be of sufficient interest to public health to warrant mention here. Infants with gonorrheal ophthalmia treated with sulfonamide drugs by mouth were cured quickly, without complications.

BLUMBERG, M. L., and GLEICH, M. The Simplified Treatment of Gonococcic Ophthalmia Neonatorum With Chemotherapy. J.A.M.A. 123, 3:132 (Sept. 18), 1943.

Physical Wrecks, Unlimited—If this sampling is at all typical of our young American men, then the state of their physical incompetence is nothing short of appalling, and health and physical educational programs stand convicted of their inadequacy.

CURETON, T. K. The Unfitness of Young Men in Motor Fitness. J.A.M.A. 123, 2:70 (Sept. 11), 1943.

Some Good from Very Ill Wind—By the end of this year 25,000 asymptomatic persons will have been discovered and diagnosed as needing hospitalization for tuberculosis. That can be put to the credit of the war which, Heaven knows, has plenty on the debit side of the balance sheet.

DEMPSEY, M. New Cases of Tuberculosis Discovered by Case-Finding Surveys. Am. Rev. Tuberc. 48, 1:58 (July), 1943.

Why Does Cancer of the Lungs Increase?—Rapid increases in the death rate of cancer of the respiratory system are in striking contrast to the slowing change in death rates for all forms of cancer. The author explores the possibility of atmospheric pollution as a precipitating cause and can discover no affirmative evidence. He assumes that the causes are too complicated to be discovered by the relatively crude statistical sources now available.

DORN, H. F. The Incidence and Prevalence of Cancer of the Lung. Pub. Health Rep. 58, 34:1265 (Aug. 20), 1943.

Preventing Radium Poisoning—If proper precautions are taken, there

need never be any more deaths or injury due to exposure to radium by dial painters and others. You will be interested in the thoroughness with which the precautionary measures must be applied even though there may be no shops utilizing radium in your own bailiwick.

EVANS, R. D., Protection of Radium Dial Workers and Radiologists from Injury by Radium (and) MORRIS, G. E., *et al.* Protection of Radium Dial Painters—Specific Work Habits and Equipment. J. Indust. Hyg. & Toxicol. 25, 7:253 (Sept.), 1943.

Odd Facts Department—Twenty years ago some cultures of *Bacillus pestis* were stoppered tight and put away. When subcultured this year, 2 out of each 3 were still viable. Guinea pigs inoculated with some of the cultures died of plague and the organisms were recovered from their blood.

FRANCIS, E. Twenty-Year Survival of Virulent *Bacillus Pestis* Cultures Without Transfer. Pub. Health Rep. 58, 37:1378 (Sept. 10), 1943.

Morbidity Rates Mount—Illness rates for employed men and women in 1942 were highest of a decade. The chief incapacitating causes among the men that year were pneumonia, bronchitis, and diarrhea and enteritis. The corresponding causes for the females were diseases of the organs of locomotion, pneumonia, and neurasthenia. Interesting graphs throw some light on these phenomena.

GAFAFER, W. M. Sickness Absenteeism among Male and Female Industrial Workers 1933–1942 Inclusive. Pub. Health Rep. 58, 33:1250 (Aug. 13), 1943.

"As Long as It Isn't a Pill"—American diets are deficient in vitamins, and the American diet is what the war worker eats. Vitamin concentrates fed to war workers increase production, and production is the essence of our national salvation. Ergo, give workers vitamins. Even some of the cons among the discussers admit that brewer's yeast might properly be given—as long as it isn't in "pill" form. As this seems to be breaking-the-rule month for this bibliography, the rule of items from scientific periodicals only is broken to point to a paper in this excellent report which should be in every public health agency's library.

HAGGARD, H. W. Should War Workers Be Fed Vitamins? The Nutrition Front. Legislative Document No. 64, 1943. Report of the New York State Joint Legislative Committee on Nutrition.

Good News for Infant Pin Cushions — Alum-precipitated, combined diphtheria toxoid and pertussis vaccine protected children against both diseases and spared the youngsters some unwelcome injections.

KENDRICK, P. L. A Field Study of Alum-Precipitated Combined Pertussis Vaccine and Diphtheria Toxoid for Active Immunization. Am. J. Hyg. 38, 2:193 (Sept.), 1943.

Our Ill-Favored Youth—Among 45,000 draft registrants 18 and 19 years old, 253 per 1,000 were rejected. The table of causes of rejection for white boys and negroes is disheartening but important. It should be noted that the cream of the physical crop had already enlisted or had been enrolled while in college, or had been accepted in defense jobs. Still the record is dreadful.

ROWNTREE, L. G., *et al.* Causes of Rejection and the Incidence of Defects. J.A.M.A. 123, 4:182 (Sept. 25), 1943.

It's Not Just Chills'n'Fever—Recent experiences with malaria have given rise to some new concepts in the prevention and treatment of the disease which you should know about. Atypical malaria complicates the picture. In the same issue of the *Journal* is an official pronouncement on the modern treatment of malaria.

TALBOT, D. R. New Aspects of Malaria. J.A.M.A. 123, 4:192 (Sept. 25), 1943.

Sister Kenny Should Worry!—Kenny concepts of muscle involvement in poliomyelitis, although the basis of an excellent type of treatment, are inadequate as a physiologic explanation of the dysfunction present. Proof-of-the-pudding minded health workers will read this excellent paper with a detached open-mindedness. Of Kenny's three descriptive terms, only "incoördination" holds water: but for this the authors suggest, as a substitute, "disordered reciprocal innervation."

WATKINS, A. L., *et al.* Concepts of Muscle Dysfunction in Poliomyelitis. J.A.M.A. 123, 4:188 (Sept. 25), 1943.

A Paper You Should Read—Roughly 25 per cent of our food production will be purchased by the government, yet as much will be left for home consumption as was used before the war. Red meat—believe it or not—is almost as plentiful as for the period 1935–1939: at 124.5 pounds per capita. With better money wages consumption of the protective (and expensive) foods was greatly increased. But, even in this day, a fifth of our population does not receive income enough to purchase the kind of food needed for a good diet. Note of apology: these annotations are not intended to be in the nature of abstracts, but I couldn't resist a few excerpts from this paper packed with useful information.

WILDER, R. M. Nutritional Requirements in Time of War. New Eng. J. Med. 229, 13:495 (Sept. 23), 1943.

Garbage-Fed Swine Stand Condemned—Among nearly 12,000 postmortem examinations of diaphragm muscle conducted the country over, 16 per cent were positive for *Trichinella spiralis*. Data are presented in this summary which indicate that superimposed trichina infections occur, that previous infections confer no immunity, and that not all attacks are diagnosed.

WRIGHT, W. H., *et al.* Studies on Trichinosis. Pub. Health Rep. 58, 35:1293 (Aug. 27), 1943.

Toward Better Mental Health—Something about the historical and the present-day activities of the twenty year old mental health program in Massachusetts. The constantly increasing preventive services rendered by the state agency and the heightening public awareness of the need for better mental health facilities are telling straws in the wind.

YERBURY, E. C. A State Mental Hygiene Program. Mental Hygiene. 27, 3:457 (July), 1943.

ASSOCIATION NEWS

OFFICERS, 1943–1944

President, Felix J. Underwood, M.D., Jackson, Miss.
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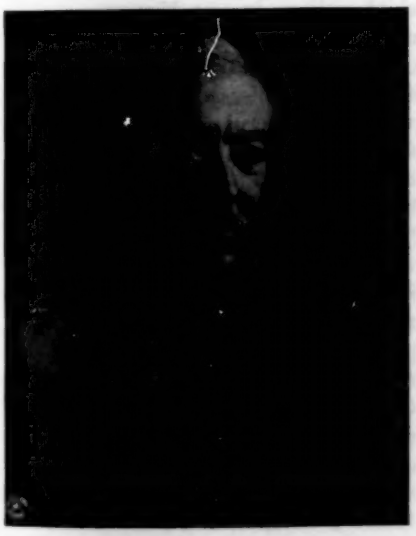
Edward G. McGavran, M.D., Clayton, Mo. (1946)

Sedgwick Memorial Medal for 1943 Awarded to Dr. James Stevens Simmons

Brigadier General James Stevens Simmons, M.C., U. S. A., to whom the Sedgwick Memorial Medal was awarded for 1943, is Chief of the Preventive Medicine Division of the Office of the Surgeon General, U. S. Army, Washington, D. C. General Simmons was born in North Carolina in 1890. After attending Davidson College and the University of North Carolina he received his medical degree in 1915 from the University of Pennsylvania, followed in 1934 by a Ph.D. degree at George Washington University Medical School, and by the doctorate in public health at Harvard in 1939. Davidson College awarded him an honorary doctorate in science in 1937. Dr. Simmons entered the Medical Corps in July, 1916, serving as Chief of the Laboratory Service at the Base Hospital at Fort Bliss, Tex., and Commanding Officer of the Southern Department Laboratories and Chief of Laboratory Service, Fort Sam Houston, Tex. He organized and commanded the stationary overseas laboratory No. 6 at the Yale Army Laboratory School 1918. He was in charge of laboratory work investigating meningitis carriers 1919, and in that year became Chief of Laboratory Service, Walter Reed Hospital, Washington. He later served in laboratory positions in the Hawaiian Islands and was placed in charge of



James Stevens Simmons

the Department of Bacteriology at the Army Medical, Dental and Veterinary Schools, Washington, where he served from 1924 to 1928, later becoming Director of the Department of Preventive Medicine in the Army Medical, Dental and Veterinary Schools, Washington.

General Simmons has shown special interest among other subjects, in leprosy control and in the encephalitis epidemic in St. Louis. He has been a member of the National Malaria Committee since 1936. He served on the A.P.H.A. Committee for the Study of the Effectiveness of Typhoid Vaccination. He is a lecturer in preventive medicine at The Johns Hopkins Medical School, and is the Army member of the Division of Medical Sciences, National Research Council. His recently collected bibliography included 98 titles.

MESSAGE FROM THE BRITISH MINISTER OF HEALTH

The Right Honorable Ernest Brown, M.C., M.P., Minister of Health in Great Britain, has sent the following message to the American Public Health Association through Frank A. Calderone, M.D., the Chairman of the War Health Information Committee in connection with the 72nd Annual Meeting of the Association.

"The British Commonwealth of Nations and the United States of America are linked in a common struggle against common enemies. When the forces of evil are defeated, there will be new battles to be fought; and one will be against Disease, that eternal enemy of human happiness, security and welfare. If we are to win the peace, the Battle of Health must be waged with all available resources and on the broadest possible front. We shall still be engaged in a common struggle against common enemies; because disease knows no boundaries, and the public health problems which will follow global warfare cannot be tackled effectively unless they are approached internationally.

"Already there is a large measure of co-operation between the Allies—complete exchange of information, and pooling of resources in drugs and medical equipment, for example. We have had in Britain most valuable personal assistance from leaders of American Medical Science such as Professor Gordon of Harvard, Professor Sydenstricker, Dr. Meiklejohn, Dr. Wilson and many others. From our side of the Atlantic Ocean, Sir Wilson Jameson, Dr. Macintosh, Professor Burn and the late Dr. Warrington York have paid visits to facilitate co-operation and to tell you all they can about our experience of public health problems under the strains of war, including heavy bombing of civilian populations. International co-operation of this kind must continue and, indeed, expand. I shall look forward to the return of Dr. Dorothy Taylor, the Senior Medical Officer for maternal and child welfare in my Ministry, and to receiving from her a first hand account of your deliberations in which she is taking part this October.

"The pioneering spirit of the Rockefeller Foundation in bringing health to the less fortunate peoples of the earth has been a pointer on the way of social betterment which the British Commonwealth is also following. Even more intensive measures are being taken in the Colonies and Dependencies to improve medical services in the widest sense. I do not need to remind this Conference of the leading place British doctors have taken in the development of the science of Tropical Diseases. A special problem of the present and the future is malaria, and I can assure you that the Governments of our two

peoples have completely interlocked their plans for dealing with this terrible menace.

"The problem of post-war relief of the peoples we shall free from Nazi tyranny are staggering in their magnitude. Already large scale plans are being made by our Governments acting in concert. I see in this a tremendous impetus to international co-operation which will not die away when the immediate crisis is past.

"On the Health Front at home, Britain has learned three big lessons. For the first time, we have a national, planned policy on nutrition; and living as we are on a narrow margin of rations, we have drawn rich dividends from it. I fully believe that after the war none of us is going to lose sight of the benefits that would come from an international view of the nutrition question.

"The second point is that popular interest in health questions—not just personal health, but public health—has increased during the war. Without the informed interest and consistent support of the mass of the people, we could not have maintained national health. There is a new interest in health as something positive, not merely freedom from disease. Health has become news, and Prevention is acquiring some of the drama of Cure. Total war has made us realise more keenly than ever before in our history that it is upon the health of the people that all our power depends, and that better health cannot be secured without the full co-operation of the people themselves.

"The third lesson we in Britain have learned is the need to knit together and expand all the various health services. We have got more team-work in medicine; after the war we must achieve still more. His Majesty's Government has accepted the principle of a comprehensive National Health Service which will provide all forms of medical and hospital care for every man, woman and child in Britain, as a matter of citizen right.

"I am convinced that if the world is to cope effectively with the grave problems of control of disease which will arise in the post-war period, we shall need planned, *inspired* team-work in the international field, and a wide public recognition in the democratic nations of the global character of public health protection.

"Your Association has done magnificent work in the field of public health, work I may say which is continually watched and admired by the officers of my Ministry. May you long continue to carry the standard of progress!"

APPLICANTS FOR MEMBERSHIP

The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.

Health Officers Section

Erich J. Arendt, M.D., Health Dept., Commerce St., San Antonio, Tex., Asst. Health Officer

Frederick R. Bausch, M.D., City Hall, Allentown, Pa., Health Officer

Roy E. Borrowman, M.D., 27 East St., Fort Edward, N. Y., Health Officer

Lloyd A. Clarke, M.D., D.P.H., 22 Main St. W., Hamilton, Ont., Canada, Asst. Medical Officer of Health

John W. Dabbs, M.D., Leflore County Health Dept., Greenwood, Miss., Director

Thomas C. Hodgson, M.B., 197 Worthington Ridge, Berlin, Conn., Health Officer

Major Robert W. Johnson, M.C., 407 N. Clements, Gainesville, Tex., Camp Medical Inspector, A.U.S.

Charles W. Kelley, M.D., Box 748, Brownwood, Tex., Director, Brownwood-Brown County Health Unit

Ronal B. Kirkpatrick, M.D., 918 Palm St., Abilene, Tex., City and County Health Officer

Andrew O. Laakso, M.D., 27 Broad St., Danielson, Conn., Local Health Officer

Florence E. MacInnis, M.D., Milwaukee City Health Dept., City Hall, Milwaukee, Wis., Medical Supt., Tuberculosis Division

William R. Martin, M.D., Charlotte C. H., Va., Charlotte County Health Officer

Dr. Antenor Miot, Les Cayes, Haiti, Administrateur, Service National d'Hygiene et Assistance Publique, Cayes

Henry G. Morgan, M.D., Old Citadel, Charleston, S. C., Director, Venereal Disease Control, City and County Health Dept.

Stenon Rey, M.D., Hospital Justinien, Cap-Haitien, Haiti, Public Health Officer, Service National d'Hygiene et Assistance Publique

Samuel F. Ridings, D.D.S., 513 Walnut St., Greenville, Ohio, Member, Health Council, State Dept. of Health

Arthur J. Schaible, M.D., Box 1330, Fairbanks, Alaska, Deputy Commissioner of Health, Territorial Dept. of Health

Arthur J. von Werssowetz, M.D., Baroness Erlanger Hospital, Chattanooga 3, Tenn., Director, Venereal Disease Control Program, Hamilton County Health Dept.

Laboratory Section

Jacques Archambault, D.Sc., 89 East, Notre-Dame, Montreal, Que., Canada, Chief Chemist, Div. of Laboratories, Ministry of Health

Catharine Atwood, Bacteriological Laboratory, Haymarket Sq. Bldg., Boston, Mass., Bacteriologist, Health Dept.

Walter C. Bartsch, 205 E. 24th St., New York, N. Y., in charge of Control Work and Laboratory, Pioneer Ice Cream Div., The Borden Co.

Louis V. Blubaugh, Ph.D., 3853 Kirkup Ave., Kennedy Hts., Cincinnati 13, Ohio, Chief Bacteriologist, The Wm. S. Merrell Co.

Frederick Boerner, V.M.D., 3403 Huey Ave., Drexel Hill, Pa., Bacteriologist, State Dept. of Health

John H. Brewer, Ph.D., 1030 N. Charles St., Baltimore, Md., Director of Bacteriological Research, Hynson Westcott and Dunning, Inc.

Esther E. Brintzenhoff, 407 Angell St., Providence, R. I., Bacteriologist and Serologist, Rhode Island Hospital

Paul H. C. Brutsaert, M.D., 10 Sherman Ave., Bronxville 8, N. Y., Director of Laboratory, Belgian Congo

Mayme C. Colvin, 519 Dexter Ave., Montgomery, Ala., Senior Serologist, State Health Dept.

Saul Frances, M.S., Pease Laboratories, Inc., 39 West 38th St., New York 18, N. Y., Research Biologist

David Kahler, 306 Garnet, Houghton, Mich., Bacteriologist, State Dept. of Health

Fern K. Line, Rt. 1, Box 20, Okemos, Mich., Bacteriologist, State Dept. of Health

Dorothy Novotny, Lederle Laboratories, Inc., Pearl River, N. Y., Bacteriologist, Testing Dept.

Edith W. Pritchett, State Branch Laboratory, Tuscaloosa, Ala., Senior Bacteriologist, State Health Dept. Lab.

Mrs. Sarah B. Stephens, P. O. Box 1139, Hartford 1, Conn., Senior Microbiologist, Bureau of Labs., State Dept. of Health

Vital Statistics Section

Isidore Altman, M.S., 2733 S. Veitch St., Arlington, Va., Asso. Statistician, U. S. Public Health Service

Marie-Louise R. Daste, M.A., 624 Lowerline St., Apt. M., New Orleans, La., Statistician, Div. of Public Health Statistics, State Health Dept.

Albert P. Iskrant, M.A., U. S. Public Health Service, Washington 14, D. C., Senior Public Health Representative

Marion K. Macdonald, M.D., 156 Allen Place, Hartford, Conn., Interne, Long Island College Hospital, Brooklyn, N. Y.

Christopher Tietze, M.D., 615 N. Wolfe St., Baltimore 5, Md., Research Associate, Johns Hopkins University School of Hygiene and Public Health

Engineering Section

Chesley W. Cochran, 114 E. Carson, Blackwell, Okla., Sanitarian, Kay County Health Unit

Lieut. Yates Cook, 309 Hilltop Rd., Linthicum Heights, Md., Chief, Div. of Housing, City Health Dept.

Herbert J. Dunsmore, 213 N. Liberty St., Marshall, Mich., Public Health Engineer, Calhoun County Health Dept.

Raymond J. Faust, State Dept. of Health, Lansing 4, Mich., Sanitary Engineer

William Adwin Ross, 221 S. 21st St., Richmond, Ind., Supt., Sewage Treatment Works, City of Richmond

Ivan F. Shull, 8316 Carey Lane, Silver Spring, Md., Senior Sanitary Engineer, Office of Labor, War Food Administration

Marvin L. Smith, 852 U. S. Custom House, Chicago, Ill., Sanitary Engineer, States Relation Division, U. S. Public Health Service

Industrial Hygiene Section

Rosa H. Clarke, R.N., Rt. 1, Manning, S. C., Consultant Nurse, Industrial Hygiene, State Board of Health

Thomas P. Marsh, M.A., 116 Temple St., City Health Dept., Los Angeles 12, Calif., Asst. Industrial Hygiene Engineer, U. S. Public Health Service

Lester V. Taylor, M.A., 405 Arlington Ave., Elmhurst, Ill., Supervisor of Food Inspection and Analysis, American Can Co.

Food and Nutrition Section

Edwin G. Applegate, 426 Burd St., Pennington, N. J., Senior Chemist, Food and Drug Bureau, State Dept. of Health

David G. Graham, M.S., Box 308, Rogersville, Tenn., Supervisor, Farm Security Administration

Estelle G. Hoffman, 311 South Allen St., Albany 3, N. Y., Nutritionist, State Dept. of Health

Martin A. Hoffman, 5816 Clover Rd., Baltimore, Md., Junior Chemist, U. S. Dept. of Agriculture

Ivan D. Jones, Ph.D., 2710 Rosedale St., Raleigh, N. C.

Herbert E. Longenecker, Ph.D., Dept. of Chemistry, Univ. of Pittsburgh, Pittsburgh, Pa., Professor of Chemistry and Director of Buhl Foundation Research Project

Henry E. Medbery, 1128 Sixteenth St., N.W., Washington 6, D. C., Acting Director, Technical Service, American Bottlers of Carbonated Beverages

Maternal and Child Health Section

Mary E. Barnes, M.A., Room 320, State Health Dept., Atlanta, Ga., Nutrition Consultant

Public Health Education Section

Mayola S. Center, Room 240, State Office Bldg., Atlanta, Ga., Social Hygiene Consultant, State Dept. of Public Health

Harold J. Cronin, D.M.D., 739 Liberty St., Springfield, Mass., Council on Dental Health, Massachusetts Dental Society

Joseph M. Gantz, Ph.D., 312 W. 9th St., Cincinnati, Ohio, Asst. Secretary, Public Health Federation

Oscar Gottfried, 1440 Broadway, New York, N. Y., Editor, The New York Physician

George W. LaBrier, M.D., 1007 Ayres St., Corpus Christi, Tex.

Dominick J. Lacovera, Ph.D., St. Agnes Hospital, White Plains, N. Y., Interne

Margaret C. Lewis, M.D., 155 East 44th St., New York, N. Y., National Health and Safety Adviser, Girl Scouts, Inc.

Gladys M. Park, R.N., 2 East 12th St., New York, N. Y., Secretary, Health Information Service, N. Y. Tuberculosis and Health Assn.

Elliott C. Small, D.D.S., 239 E. 51st St., Chicago, Ill., Public Health Dentist, State Dept. of Public Health

Public Health Nursing Section

A. Evelyn Chesson, County Health Dept., Oxford, N. C., Staff Nurse, Granville County Health Dept.

Nellie R. Dillon, R.N., 100 N. Main St., Providence, R. I., Director, Providence District Nursing Assn.

Grace E. Euteneuer, R.N., 223 E. Dearborn St., Havana, Ill., Public Health Nurse, State Dept. of Public Health

Elizabeth M. Evans, R.N., M.S., Box 221, Cordova, Alaska, Public Health Nurse, Territorial Dept. of Health

Gladys L. Garland, 923 Fulton County Court House, Atlanta, Ga., Supervisor of Nurses, Fulton Co. Health Dept.

Lucy C. Hawkins, R.N., M.A., 113 Winthrop St., Augusta, Me., Supervisor, Div. of Nursing, State Bureau of Health

Mary M. James, 1903 Monroe St., Toledo, Ohio, Director, Toledo District Nurse Assn.

Margaretta W. Potter, Stone House Farm,

Mendham, N. J., Board Member, Visiting Nurse Assn. of Somerset Hills

Helen E. Ruppe, R.N., 614 South Morris Ave., Bloomington, Ill., Asst. Director of Nurses, St. Joseph School of Nursing

Sarah B. Selterman, R.N., Orleans County Public Health Nursing Service, Medina, N. Y., County Nurse

Marion E. Shand, 329 S. 17th St., Philadelphia 3, Pa., Executive Director, Starr Centre Assn.

Dorothy D. Stewart, R.N., Room 601, Hotel Jamestown Bldg., Jamestown, N. Y., District Supervising Public Health Nurse, State Dept. of Health

Vivian Visscher, 401 East Madison, Ann Arbor, Mich., Staff Nurse, Washtenaw County Health Dept.

Janet F. Walker, School of Nursing, Catholic Univ., Washington, D. C., Director, Div. of Public Health Nursing

Epidemiology Section

Cecil K. Blanchard, 144 S. Main St., Pennington, N. J., Asst. Epidemiologist, State Dept. of Health

C. Robert Hess, M.D., Insular Sanatorium, Ponce, Puerto Rico, Attending Physician

Allan Hurst, M.D., 125 Worth St., New York, N. Y., Supervisor of Clinics, Bureau of Tuberculosis, Health Dept.

Lt. Comdr. Louis C. Morris, M.C., U.S.N.R., Epidemiological Unit 24, Naval Operating Base, Norfolk 11, Va.

Lt. Comdr. William A. Myers, M.C., U.S.N., N.C.T.C., Davisville, R. I., Epidemiologist, Ninth Naval District

Lowell L. Stokes, M.D., Box 410, McMinnville, Tenn., Director, Div. of Venereal Disease, Warren Co. Health Dept.

I. Jackson Tartakow, M.D., M.S.P.H., 10 Washington St., Hempstead, N. Y., Epidemiologist, Nassau County Dept. of Health

Everett P. Veatch, M.D., M.P.H., P. O. Box 687, Pasadena, Tex., Control of Trypanosomiasis

School Health Section

B. Marion Hilts, 40 Fairview Place, Santa Cruz, Calif., Supervising School Nurse, Santa Cruz City Schools

Elizabeth J. McGinness, M.S., 1210 North Ave., North High School, Sheboygan, Wis.

Bernice Moss, M.A., 221 State Capitol, Salt Lake City, Utah, State Director of Health, Physical Education and Recreation, State Dept. of Education

Ethel Winn, Spencer Ave., Elwood, Ill., Supervising Nurse, Joliet Elementary Schools

Unaffiliated

John B. Alsever, M.D., U. S. Office of Civilian Defense, Washington, D. C., Surgeon (R), U. S. Public Health Service

Arleen S. Barron, 818 Santa Ray Ave., Oakland, Calif., Laboratory Technician, Peralta Hospital

Abraham O. Wilensky, M.D., 12 East 87th St., New York 28, N. Y., Practising Physician

DECEASED MEMBERS

Loneta M. Campbell, R.N., Cincinnati, Ohio, Elected Member 1934, Elected Fellow 1938, Public Health Nursing Section

J. K. Gore, Orange, N. J., Elected Member 1921, Unaffiliated

Ruth Ogden Pierson, East Orange, N. J., Elected Member 1917, Laboratory Section

NEWS FROM THE FIELD

PUBLIC HEALTH SERVICE ORDINANCE FOR EATING AND DRINKING ESTABLISHMENTS, 1943

The U. S. Public Health Service has published *Public Health Bulletin No. 280* (U. S. Gov. Ptg. Office, Washington, D. C., 20¢), representing the first printed edition of an ordinance and code recommended for adoption by local communities and states in order to encourage a greater uniformity and a higher level of excellence in the sanitary control of eating and drinking establishments. This edition replaces the mimeographed 1940 edition.

Among the changes made in this edition of the Ordinance and Code, there may be mentioned the inclusion of illustrations and explanatory material which has been improved and expanded; field tests have been provided for cadmium and cyanide, rebaking of cream-filled pastries or adequate boiling of the filling is required, running water under pressure is required, lavatories must be supplied with hot and cold running water, and the swab test technic given is that proposed in June, 1943, by the Subcommittee on Food Utensil Sanitation of the A.P.H.A. It is also provided that the restaurant building is required to be rat-proofed and training courses for food handlers are recommended.

VISITING PROFESSORS NAMED AT PUERTO RICO SCHOOL OF TROPICAL MEDICINE

Columbia University, New York, N. Y., recently announced the appointment of 5 visiting professors at the School of Tropical Medicine in San Juan, Puerto Rico, which is operated in connection with the University. The names of the new visiting professors are as follows: Dr. Ceil A. Watson, Dr. Gustavo Pittaluga, Dr. Antonio Fernos-Isern, Dr. Tomas Blanco, and Dr. Joseph H. Bolton.

QUEBEC PRIESTS TO STUDY PUBLIC HEALTH AT YALE

Dr. Jules Gilbert, Director of Public Health Education, with the financial assistance of the Ministry of Health, Quebec, is collaborating with six teaching orders to send five Catholic brothers and two fathers to the Department of Public Health, Yale University School of Medicine, New Haven, for a year's training in health education and public health. On their return to Quebec they will devote themselves primarily to school health education work in the normal schools of their respective orders, in conjunction with the Ministry of Health. The group will consist of the following:

R.P. Roland Blondeau, Rosemont
R.P. Raymond Lavoie, Joliette
R.F. Berchmans-Eugène, Laprairie
R.F. Evan, Sorel
R.F. Gaston Quenneville, Outremont
R.F. Jean-Lucien, Granby
R.F. Rémi Donat, Iberville.

STAFF CHANGES, MEDICAL AND HEALTH SERVICES, AMERICAN RED CROSS

Albert McCown, M.D., Dr.P.H., has resigned as Director of Medical and Health Services of the American Red Cross to accept a commission as Lieutenant Colonel in the Medical Corps, A.U.S. and is leaving shortly for a foreign assignment with the Allied Military Governments.

G. Foard McGinness, M.D., Dr.P.H., the director of Medical and Health Services for the Midwestern Area, American Red Cross, St. Louis, has been appointed acting director of Medical and Health Services at Na-

tional Headquarters of the Red Cross, Washington.

Amos G. Christie, M.D., of Washington has resigned as assistant director of Medical and Health Services, American Red Cross, as of October 1, to become Professor of Pediatrics at Vanderbilt University School of Medicine, Nashville, Tenn., succeeding the late Horton G. Casparis, M.D.

AMERICAN STANDARDS ASSOCIATION REVISES CODE FOR ABRASIVE WHEELS

The American Standards Association has announced approval of an important revision of the Abrasive Wheel Safety Code, the first revision since 1935. New sections have been added to keep pace with changes in the industry. Completely new rules have been written for mounted wheels. New speed rules have been drawn up for crankshaft grinding, camshaft grinding, and thread grinding operations. While the basic speed tables remain the same, the Code has been carefully reviewed and many points have been clarified. Need for a revision of the Code became increasingly apparent during the period of expanding war industries. Several types of abrasive wheels and grinding operations which previously had very limited usage, found an important place in the new industries. The *Safety Code for the Use, Care, and Protection of Abrasive Wheels* (B7-1943) may be obtained from the American Standards Association, 29 West 39th Street, New York 18, N. Y., at 35 cents per copy.

HEALTH UNIT IN VERA CRUZ

The *Journal of the American Medical Association* reports that the Department of Health of Mexico has entered into an agreement with the School of Medicine at Tulane University, New Orleans, to establish a health unit and field training station at Boca del Rio, Vera Cruz, Mexico. The unit will function as a health center for the welfare of the community and serve as a training center for physicians named by the Department of Health of Mexico or by the University with the approval of the Mexican Department.

SIR ARTHUR NEWSHOLME'S BEQUEST

Science reports that Sir Arthur Newsholme, who died on May 17, bequeathed the residue of his estate to the London School of Hygiene and Tropical Medicine.

REFRESHER COURSE IN TROPICAL MEDICINE

The South Dakota State Board of Health in coöperation with the U. S. Public Health Service sponsored a series of lectures on tropical diseases to medical students in six areas of South Dakota. M. Fernan-Nunez, M.D., Professor of Pathology and Tropical Medicine, Marquette University Medical School, Milwaukee, was the speaker. Dr. Fernan-Nunez also lectured at Camp McCoy, Wisconsin, in September on Malaria.

NEW YORK STATE STAFF MEMBERS STUDY TROPICAL DISEASES

New York State *Health News* reports that Robert F. Korns, M.D., Dr.P.H., Epidemiologist on the staff of the Division of Communicable Diseases, has been granted a leave of absence for special study and clinical observation of tropical diseases. He will spend two months in tropical medicine at the Army Medical School in Washington and then travel to Honduras and Guatemala, Central America, as a member of the faculty of Albany Medical College, under the program sponsored by the Association of American Medical Colleges.

Paul A. Lembcke, M.D., District Health Officer of the State Department of Health, has just returned from a trip to Costa Rica and Guatemala where

he was sent as a member of the staff of the University of Rochester Medical School to obtain clinical experience in the tropical diseases.

Albert H. Harris, M.D., Associate Bacteriologist in the Division of Laboratories and Research of the department attended the course in tropical and military medicine given at the Army Medical School which ended in June.

OFRRO APPOINTMENTS

The Office of Foreign Relief and Rehabilitation Operations of the U. S. Department of State has announced the appointment of Margaret G. Arnstein, R.N., recently of the New York State Department of Health, and of Therese Kerze, R.N., formerly Assistant Director of the Judson Health Center, New York, as Senior Public Health Nursing Officers in OFRRO. Both of the appointees are spending a brief period in Washington for training purposes before going overseas. The current intensive orientation and training course includes 22 persons for a period of 4 to 6 weeks.

NUTRITION FOUNDATION RESEARCH

Annually $237,000 is now being contributed by 37 food and related manufacturers to the Nutrition Foundation in support of basic research in the science of nutrition, according to a statement made by George A. Sloan, President of the Foundation.

It was also announced that Abbotts Dairies of Philadelphia and the American Lecithin Company of New York have become Sustaining Members of the Foundation. C. R. Lindback, President of Abbotts Dairies, and Adrian D. Joyce, Chairman of the American Lecithin Company, have become members of the Board of Trustees, which consists of 11 representatives from the public and 33 from industry.

Mr. Sloan stated that the Nutrition Foundation is now supporting 70 basic studies in 38 institutions in the United States and Canada. On the recommendation of the Scientific Advisory Committee of the Foundation, grants-in-aid amounting to $302,840 have been paid to these institutions since the organization of the Foundation on March 12, 1942.

PERSONALS

Central States

ADDISON D. ALDRICH, M.D., of Houghton, Mich., has been named Director of the Houghton-Keweenawa-Baraga Health Department.

HENRY H. ASHER, M.D.,† of Topeka, Kans., has resigned as Director of the Division of Local Health of the Kansas State Board of Health, to become Health Officer of Alger and Schoolcraft Counties, Mich.

JOSEPH H. CHIVERS, M.D., Medical Director of the Crane Company, Chicago, Ill., has been appointed Chairman of the Advisory Committee to the Illinois State Division of Industrial Hygiene, succeeding the late PHILIP H. KREUSCHER, M.D.

MORDECHAI A. ELSTEIN, M.D.,† of Escanaba, Mich., was recently named Health Officer of Delta County, it is reported.

SYDNEY J. HEELEY, M.D., of Barton, Ohio, has been appointed Health Commissioner of Jefferson County.

JEROME J. SIEVERS, M.D., M.S.P.H.,* who has been Assistant to the Chief of the Division of Communicable Diseases, Illinois State Department of Health, and formerly a district health superintendent, has been appointed Assistant State Health Director of the Department under ROLAND R. CROSS, M.D., Director.

Eastern States

NEWTON J. T. BIGELOW, M.D., of Brentwood, N. Y., Clinical Director

of the Utica State Hospital, Utica, N. Y., has been appointed Superintendent of the Hudson River State Hospital, Poughkeepsie, N. Y., and Acting Assistant State Commissioner of Mental Hygiene. Dr. Bigelow will "fill the military absence of the present Assistant Commissioner, HARRY BECKETT LANG, M.D., of Albany."

JOHN MOORE CAMPBELL, JR., M.D., former Director of Health Conservation, has been appointed Deputy State Secretary of Health in Charge of Medical Affairs in Pennsylvania, Harrisburg, Pa. Dr. Campbell has been a member of the State Health Department for many years.

WARREN B. RAWLINGS, V.M.D.,† has resigned his position as Assistant Director of the Biological Laboratories of the Pitman-Moore Company, Zionsville, Ind., to accept a position as Production Director of the Reichel Laboratories, Inc., Kimberton, Pa.

CYRIL TASKER entered upon his duties as Director of Research of the American Society of Heating and Ventilating Engineers, New York, N. Y., on October 1. For the past 13 years, Mr. Tasker has been a member of the staff of the Ontario Research Foundation and carried on investigations relating to fuels and a variety of problems connected with heating and air conditioning.

NEAL N. WOOD, M.D.,† of Mackinac Island, Mich., Health Director of Charlevoix, Emmet, Otsego, and Antrim Counties, has been appointed in charge of the Bay County Department of Health, succeeding DOUGLAS A. FRYER, M.D., D.P.H.† Bay City, resigned.

Southern States

CHARLES E. BALLARD, M.D., of Allendale, S. C., former Health Officer for Oconee and Pickens Counties, has been appointed Health Officer for Beaufort County. EDMOND J. BRYSON, M.D., of Liberty, former Health Officer of Greenwood County, will now serve in this capacity in Oconee and Pickens Counties, and MAULDIN J. BOGG, JR., M.D., of Abbeville, Health Officer of Abbeville and McCormick Counties will also direct the Greenwood County Health Department until a successor to Dr. Bryson is named.

AGNES L. BROWN, M.D., of Hardinsburg, Ky., has been named Health Officer of Muhlenberg County.

BENJAMIN M. DRAKE, M.D.,† of Carthage, N. C., has been appointed full-time Health Officer of Rockingham County, succeeding DOUGLAS H. FLYER, M.D.

JACOB D. FARRIS, M.D., formerly college physician at Eastern Kentucky State Teachers College, Richmond, Ky., now occupies a similar position at Emory University, Atlanta, Ga.

THEODORA A. FLOYD, R.N.,† former Associate Director of Public Health Nursing in the State Department of Health in Georgia, has been appointed Regional Consultant Nurse for the Children's Bureau in the Southeastern area, with headquarters in New Orleans. Miss Floyd was formerly the MCH Consultant Nurse in the Territorial Department of Health in Hawaii and Director of the Public Health Nursing course at the University of Hawaii.

O. M. GOODLOE, M.D., C.P.H.,† who has been Assistant Director of the Bureau of County Health Work in the Kentucky State Department of Health, Louisville, has been appointed Deputy Health Officer and Director of the Bureau of Maternal and Child Health in the Health Department in Peoria, Ill., under DR. S. M. MILLER,* Commissioner. His appointment was effective October 1.

PHARES Y. GREENE, M.D.,† of Graham, N. C., has resigned as Health Officer of Alamance County, effective August 1, to devote his full time to private practice.

JAMES F. HACKNEY, M.D., M.P.H.,† has been made Director of the Health Department of Atlanta, Ga.

ROBERTS A. HEARN, M.D.,† assigned by the U. S. Public Health Service as Director of Industrial Hygiene, Arkansas State Board of Health, has resigned to become Medical Director of the Indiana Division of the Republic Aviation Corporation, it is reported.

EDWARD ALEX HEISE, M.D.,† has been appointed to direct the Sumter County Board of Health for the City of Sumter and Sumter County, S. C.

ROSCOE P. KANDLE, M.D., M.P.H.,† of the Calcasieu Parish Health Unit, Lake Charles, La., has been appointed Director of the Division of Local Health Service, Louisiana State Department of Health, New Orleans. This position was formerly held by C. L. MENGIS, M.D.,† who has been appointed Director of the Ouachita Parish Health Unit, Monroe, La.

EDMOND G. KLAMKE, M.D., M.P.H.,† formerly Director of the Webster Parish Health Unit, has been appointed Director of the Alexandria-Rapides Health Department, and Health Officer of Rapides Parish and the City of Alexandria, La.

ELIAS W. LANGS, M.D.,† Assistant Surgeon, U. S. Public Health Service, has been appointed Health Officer of Norfolk County.

LLOYD W. LUTTRELL, M.D., of Walterboro, S. C., has been appointed to direct the health department of Colleton and Hampton Counties which have been combined into one unit.

CHESTER R. MARKWOOD, M.D.,† of Glasgow, Ky., has resigned as Health Officer of Allen, Barren, and Monroe Counties, to engage in private practice at Cave City.

DONALD B. MCMULLIN, Sc.D.,† Associate Professor and head of the Department of Hygiene and Public Health and Associate Professor of Bacteriology, University of Oklahoma, School of Medicine, Oklahoma City, Okla., was selected by the Committee on the Teaching of Tropical Medicine of the Association of American Medical Colleges to go to Central America during the month of September to observe methods of tropical disease control. Dr. McMullen was to spend about three weeks at a United Fruit Company Hospital and at least a week with the local field unit of the office of the Coördinator of Inter-American Affairs.

WILLIAM G. MORGAN, M.D., of Owensboro, Ky., recently resigned as Director of the Daviess County Health Department, to accept a similar position in Montgomery County.

JAMES O. NALL, M.D., of Marion, Ky., has resigned as District Health Officer of Crittenden, Lyon, and Caldwell Counties, to devote his time to private practice.

CHARLES P. POPE, M.D. JR., Health Officer of Chesterfield-Marlboro Health District, has been appointed to a similar position in Aiken County, S. C.

J. ALLEN SCOTT, Associate Director of the Division of Malaria and Hookworm Service, Georgia Department of Public Health, has resigned to become Senior Statistician of the Division of Vital Statistics of the U. S. Bureau of the Census, Washington, D. C.

SAMUEL D. STURKIE, M.D., former Health Director for the Marion-Bristol area, has been named Director of Public Welfare in Lynchburg,

* Fellow A.P.H.A.
† Member A.P.H.A.

Va. He succeeds the late MOSBY G. PERROW, Ph.D.*

Western States

FRANCIS E. C. BALLARD, M.D., M.P.H.,† of San Francisco, Calif., Medical Officer of the State Bureau of Industrial Health, has been placed in charge of the Industrial Hygiene Division of the Los Angeles City Department of Health.

CARL W. CLARK has been appointed to succeed DAVID C. CLEAVE, M.D., as Health Officer of Belvedere, Calif.

STANLEY E. COFFEY, M.D., was recently appointed Health Officer of the City of Orland, Calif., succeeding THOMAS H. BROWN, M.D.

WILLIAM H. GAUB, C.P.H.,* U. S. Public Health Service, has been lent to the Colorado State Board of Health to serve as Director of the Division of Laboratories, following the resignation of FRANCES M. MCCONNELL-MILLS, M.D.,† of Denver.

ZERAH P. KING, M.D.,† was appointed Health Officer of the City of Sanger, Calif., succeeding BENJAMIN H. VIAU, M.D.

CLIFFORD V. MASON, M.D., Assistant Superintendent of the Fairmont Hospital of Alameda County, has been appointed Health Officer of San Leandro and Alameda County to succeed STANFORD F. FARNSWORTH, M.D.,† who resigned to become Health Officer of Oakland.

COURTNEY SMITH, M.D., DR.P.H.,* of the staff of the U. S. Public Health Service, has been appointed Regional Medical Officer of the 9th Civilian Defense Region with headquarters in San Francisco. Before entering the service a year ago Dr. Smith served in Alaska with the Territorial Department of Health after some years as Deputy Health Officer in the Portland, Ore., Department of Health.

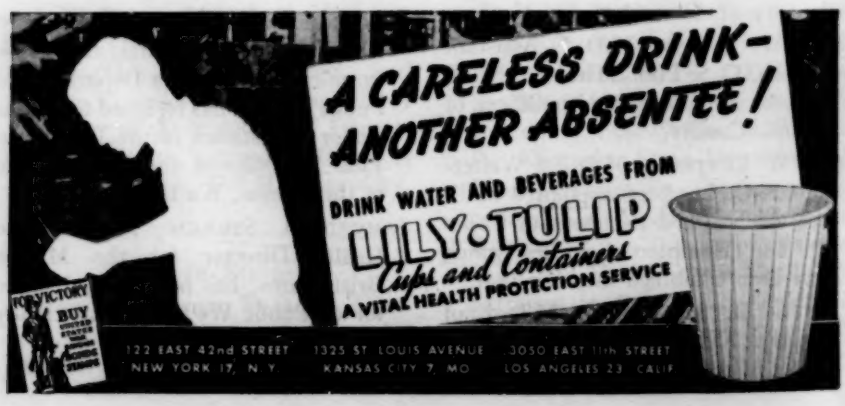
* Fellow A.P.H.A.
† Member A.P.H.A.

CONFERENCES AND DATES

American Education Week—Sponsored jointly by the National Education Association, the American Legion, the U. S. Office of Education, and the National Congress of Parents and Teachers. November 7–13.

American Library Association — Midwinter Conference. New York, N. Y. December 4–5.

American Society of Anesthetists. New York, N. Y. December 9.

American Society of Heating and Ventilating Engineers—50th Anniversary Meeting, New York, N. Y. January 31, February 1, 2, 1944.

American Water Works Association—
North Carolina Section—Hotel Robert E. Lee, Winston-Salem, N. C. November 1–3.
West Virginia Section—Clarksburg, W. Va. November 4–5.